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The Journal of GENERAL EDUCATION

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THE JOURNAL OF
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SOCIAL SCIENCE RESEARCH IN GENERAL EDUCATION

Robert Redfield

How can we make a general education which, in the field of social science, will continuously express the influence of research upon knowledge? My answer to the question is double: First, we may do so by seeing to it that teachers of general education in social science themselves do research. Second, we may do so by including in teaching of social science as a part of general education understanding of how, in social science, research is done.

Before we consider these answers, let us see if we have ourselves an understanding of the nature of research in social science. I think it will be well if in this hour we do not hold too tightly to that word "research." Like the word "science," it is a word somewhat jealously guarded. One is almost tempted to say that scientific research is what I do, whoever I may be, but that it is not what other people are doing if what they are doing is less precise in its procedures than are the procedures I use. To avoid these sensitivenesses, I suggest a restatement of the question I have just made immediate; the question becomes: How is new knowledge obtained in the comparative study of culture? Whether or not we are to call the activity "research," we are interested here in the ways in which social scientists—people so known and so trained—in this field (and others) make "the effort to remove a gradually growing body of knowledge from the realm of speculation and subjective opinion to the realm of demonstrated facts and principles about which it is no longer necessary to argue."[1] These words, characterizing social science, are those of Elbridge Sibley, a social scientist. In the same passage he adds the efforts to make predictions in some fields, and to formulate and test hypotheses, as part of social science as he sees it. I accept these characterizations also. But there may be some question as to how nearly these efforts must approach success for Sibley and me to recognize social science research as already present. So, in substituting the phrase "effort to get new knowledge," I hope to be allowed to include today a good deal of what goes on when trained minds consider facts about man in society and attempt, in a really surprising variety of ways, to relate particular special knowledge about certain men in certain societies to general propositions or principles.

I have chosen a given field of advanced research—the comparative study of culture—and discuss my topic in relation to it, so that the problems become at once concrete and particular. I am not to be understood as meaning that all that I write here about social science research is true of all of it. I do think that it is true of a good deal of it, and not only

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[1] Elbridge Sibley, "Education in Social Science and the Selection of Students for Training as Professional Social Scientists," *Items* (Social Science Research Council), V, No. 3 (September, 1951), 26.

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true of the comparative study of culture.

In his recent paper, Sibley remarks that in the natural science field "it is considered fundamentally important to learn *how* knowledge is created, while [social science programs in general education] are not yet designed to make the average student aware that any peculiarly scientific methods, however primitive they are, can be applied to the investigation of social phenomena."[2]

Is this true? Does the student who learns about social science in his general education become aware that peculiarly scientific methods can be applied to the investigation of social phenomena? What are the procedures, peculiarly scientific or not, that can be so applied? In making students aware of these procedures, is it not first necessary that those who teach social science be themselves aware of them? Might it be that the social scientists themselves are not fully aware of how new knowledge, leading to general propositions related to special knowledge, is obtained in their field? I think about these questions and, seeking light, turn to a personal experience which I now venture to relate.

Last winter, while staying in Mexico, my son, a student in the College of the University of Chicago, carried on the work of certain courses of that program of general education, and I worked with him, learning as he did. Two of the courses presented an interesting contrast. In the second of the three year-long courses in the natural sciences ("Natural Sciences 2"), we found ourselves reading the original texts of a series of scientific papers having to do with diabetes, anatomy, and physiology. The series recorded the development of knowledge as to the causes of diabetes and, more generally, knowledge of those metabolic functions of which diabetes is one pathological disturbance. As we read these papers, we saw how one piece of new knowledge led to the making of another experiment, a new discovery. One saw the influence of research in anatomy upon the interpretations of the clinician, of experiment in physiology upon biochemistry, etc. The story went something like this: In 1840 a medical man sums up what observation of diabetes has shown as to the symptoms and course of the disease. This physician speculates as to causes. He sees that the failure of the body to dispose of sugar is somehow involved and asserts that it is a function of the kidneys to break down sugar. In 1877 Claude Bernard, a physiologist, reviews a series of brilliant experiments which make it plain that Prout was wrong: it is the liver that is the source of the sugar found in the blood. Reading, we see the ingenuity and technical originality of the experiments on dogs by which Bernard was able to measure accurately the amount of blood sugar in the portal vein as compared with that in the arteries. Bernard has proved to us that the secret of diabetes is to be found in some future understanding of the normal processes of carbohydrate metabolism. At this time the pancreas is barely suspected of any part in the matter. Bernard has found it impossible to extirpate the pancreas from experimental animals without killing them. But in 1890 two experimenters in Strasbourg succeed in doing this and prove that total extirpation of the pancreas results invariably in diabetes, while partial destruction of the organ never does. Moreover, they tie off the excretory ducts of the gland and show that this does not result in diabetes. Evidently, whatever influence on sugar metabolism is brought about by the pancreas occurs without reference to the ducts. There is some other passage of influence from the gland to the digestive and excretory system. Three years later an anatomist reveals the connections of the Islands of Langerhans of the pancreas with the blood stream. The hidden outlet has been discovered. And in 1903 Opie performs careful autopsies on pa-

[2] *Ibid.*, p. 27.

tients who died of diabetes and confirms the conclusion of the anatomist as to the connection of these islets with diabetes. But what is it that passes from these islets to the system, and how does this whatever-it-is affect the metabolism of carbohydrates? At last, in 1922, Banting and Best publish their wonderfully conceived and conducted experiments in which, having deprived dogs of their pancreases, they prevent diabetes in the animals by administering pancreatic juice. Insulin is discovered. This technique and its product not only relieve human suffering; the pancreatic hormone, now being studied by the biochemist, is an instrument of yet further experiment, enabling the researcher to investigate a variety of effects. In 1930 two Belgian experimenters remove the anterior pituitary from animals from which the pancreas has also been removed, and the animals do not get diabetes. Thus is shown the intricate and complementary effect of at least two hormones in regulating, the one by pushing in one direction, the other by pushing in the opposite direction, on the homeostasis of carbohydrate metabolism.

I break off the story as it was told, in the readings of this course, to my son and me; there is more of it, and of course it is today far from ended as research goes on. What struck me forcibly was the impact on the general education of the two of us, of the understanding we got of the way in which new knowledge is achieved in much of the natural sciences. True, we learned something about human physiology, and something about diabetes, but I venture to suppose that it was the intention of those who made up this course in general education, as I am sure was the effect of it on us, to convey something of the progression of knowledge, by observation, hypothesis, and experiment. In much of the natural sciences method, new learning goes on as in this instance. Observations lead to inferences; the inferences are tested by experiment and either retained or displaced to make way for new ones. Once it is learned that the kidneys do not break down sugar, the mistake is not repeated. And workers in many different fields constantly affect, correct, and stimulate each other. The autopsist reports the pancreas diseased in diabetics; the anatomist then explores more carefully the normal organ; the physiologist takes the clue these men have given him and devises experiments to make use of the new knowledge so as to yield yet more knowledge. It is this about natural science that belongs, whatever else does, in general education.

The other course for which my son and I did the readings during this same winter was the first of the three year-long College courses in social science ("Social Sciences 1"). Here, too, we read original documents, and here, too, the ordering was roughly chronological. But we were learning about a very different sort of thing, and the logical connection of the content of one document with another was of a different sort. This course is about the formation of American national policy, beginning before the Revolution and extending to recent times. The readings consist of passages from books by Englishmen who affected Americans, or by thoughtful Americans; political speeches, decisions of the United States Supreme Court; important state papers, such as the Virginia Declaration of Rights and the Mississippi Black Code. I thought the course highly interesting and illuminating, but it was soon plain that there was very little in it that had to do with social science, in the strict sense. The course showed the minds of men working in relation to events, and events working upon the minds of men, in society and history, not in the laboratory or the library. When we read the court's opinion in *McCulloch* v. *Maryland*, Henry Clay's Cincinnati speech on the American System, the congressional report on the Second Bank of the United

States, and Jackson's veto message of the Bank Renewal Bill, we had before us sources on the interplay of men and mind, of happenings and opinion, of theory and practice, interest and policy, in the intricate interrelationships which are man acting and thinking in society. We certainly did not have anything about scientific method. Nor did the researches of historians appear to us. We learned very little as to how new knowledge is obtained.

At once it is to be replied that this course was designed as history, not as science. It was designed to give understanding as to the development of some ideas and ideals fundamental to American life and as to their manifestation in events and in institutions. We are reminded that history also is included in what must be taught about man in society in programs of general education.

Let us turn to the second of the three social science courses given in the College at Chicago. This is the course that includes readings that are more apparently scientific; and this is the course, recently described in this *Journal*,[3] that has to do with culture: it is referred to as a course in Culture and Personality. Does this course give an awareness of how new knowledge is obtained? In it we do find some presentation of the collecting and analysis of particular fact in relation to general idea. Elton Mayo's account of the Hawthorne experiments[4] is read. In this reading, and in others, the student may get understanding of social science method—if by that phrase we mean the collecting of particular fact as guided by hypothesis. But I think it truly fair to this excellent course to say that such readings constitute a very small part of the whole and that discussion of matters of special experimental procedure, or procedure closely similar to experiment in natural science, plays no large part in the course.

Certainly this course in Culture and Personality is sharply different from "Natural Sciences 2" in one important respect. In the social science course the learner gets no account of science making progress from point to point, moving from observation to hypothesis, confirming or rejecting the hypothesis, and moving on from the new base to make some new observation, hypothesis, or discovery. Not at all. The readings begin with a very recent work, Myrdal's *The American Dilemma*. This account of Negro-white relations, partly in terms of contemporary institutions and motives, partly in terms of history, is discussed at the beginning of the course. It is followed by readings from Freud and from Ruth Benedict. These readings do not show, with any sharpness, the design and conduct of experiment or of precisely controlled observation. They certainly do not show that social science has moved from Freud to Benedict or from Benedict to Freud. Rather, as Mr. Riesman writes,[5] the staff of the course stage a kind of dialectical argument between these two writers, these two points of view. Freud takes one view of culture, of any culture, as a sort of painful restraint upon a universal, instinctively defined human nature. Benedict regards the many different cultures as alternative provisions of motivation to people who need motives. She thinks of culture as creative influence upon highly plastic original nature. I do not stop to qualify these characterizations; the point I wish to make is that Freud and Benedict are not related to each other as are the physiological experiments of Claude Bernard to the discovery of insulin by Banting and Best. It really would not have mattered much which came first, Freud or Benedict. They present contrasting views of man in culture. It is the understanding of these contrasting views, the exami-

[3] David Riesman, "Some Problems of a Course in 'Culture and Personality,'" *Journal of General Education*, V (January, 1951), 122.

[4] Elton Mayo, *Human Problems of an Industrial Civilization* (Cambridge, 1933).

[5] Riesman, *op. cit.*, p. 125.

nation of particular fact as lighted first by the one view and then by the other, and the exploration of the ways in which the two views are necessarily inconsistent, or in which they may be made consistent, which is, I come to feel, a part of the way in which social science moves forward into new knowledge.

Probably this course does not communicate the nature of the getting of new knowledge in social science as well as it might be communicated. But I am convinced that the course does communicate something of how the effort for new knowledge, controlled so far as it can be controlled by specially sought-out fact, does in truth go forward in this part of social science. It does not show the collecting of special fact, the arranging of experiment or of strictly controlled series of observations, as the only procedure for getting new knowledge here. It is right in not doing so, for such procedures play, at this stage of development, only a limited part in social science. And, it seems to me, there is much more to the getting of new knowledge than quantification and the design of experiment. The course does show something of this "more." Indeed, I should say that the utilization of such contrasting views as those of Freud and Benedict is not only teaching; it is also a part of the operations by which trained minds, attentive to particular facts, make the effort to remove a gradually growing body of knowledge from the realm of speculation and subjective opinion to the realm of demonstrated facts and principles about which it is no longer necesary to argue. The very argument is a part of the effort. In the comparative study of culture, the argument, the dialectic, between Freud and Benedict is itself an essential operation in moving from speculation to accepted principles. This, too, is a part of what needs to be learned as to how new knowledge is obtained in social science.

This brings me to an enlarged view of what is involved if we are to include in general education understanding of how new knowledge is obtained in our field. It is to include understanding of the use of quantification, the design of experiment, and the making of a series of controlled observations. But it is to include these things only in so far as they are actually useful in social science. And it is to include understanding of such ways of advancing knowledge in social science as are actually employed whether or not they conform to the model of the precise design and the quantitative expression of result. We are not, then, to adopt a view of social science procedure which conforms to the model of the natural sciences (or, possibly, to the model of how natural sciences are imagined to be). We are to represent the getting of new, dependable knowledge in social science as it actually is. We might contrast the former view of social science with the latter and speak of social science in the natural science image and of social science in its own image. Then we might see that two kinds of things, interweaving with each other, could go into the understanding we seek to communicate as to how social science advances. It is the interweaving that matters: quantification and precise design are to be represented as they actually and fruitfully occur in the context of discussion and exploration of illuminating ideas.

Therefore, we do not best teach about procedure by making demonstrations of experiment and design of controlled observation, as if the value of these lay in their own inner perfection. These procedures are effective only in so far as they are attached to ideas that are clear and significant. The Hawthorne experiments point to the conclusion that something about personal relations motivates workers to produce more. Two things about these experiments are at least as important as the design of the experiments themselves: the history of the shifting of "hunches"—hardly hypotheses—as to why workers produce more or less; and the

great limitations, arising from ignorance of many factors, as to the inferences to be drawn from the experiments. To understand these things is to begin to understand about how social science advances. It is also, I say, to begin to learn about how to be a social scientist. We might teach about quantification by including formal instruction in statistics. But in general education we can better teach about quantification by, say, considering Murdock's way[6] of trying to prove that the nuclear family is universal: then we shall find ourselves considering the nature of correlations and of sampling by looking at Murdock's samples of human families and his correlations of certain institutions with others. Method and subject matter are best taught about by not separating them. What is needed is chiefly a little effort to look, realistically, at a particular method used in a particular context of inquiry. Malinowski's book, *Sex and Repression in Savage Society,* is regarded as a designed experiment, a "crucial instance."[7] It apparently shows that in matrilinear societies the Oedipus complex, as seen by Freud in Vienna, appears as, or is replaced by, a complex in which there is desire for the sister and hatred of the mother's brother. If this were a critical experiment, like the experiments of Banting and Best, the whole history and thought in regard to basic psychic complexes would be changed. But Malinowski's book has not wrought that change. In discussing the book as an example of designed series of observations, it is necessary to consider the limitations of the design, the shortcomings of the proof. On the other hand, it would be a misrepresentation to throw out what Malinowski did because of the imperfections of the method. The book has had influence: it has shifted emphases, suggested possibilities. It is this shifting emphasis, this suggestion of new possibilities, which plays so important a part in social science as it really is, while it falls so far short of realizing the model of social science seen in the image of the natural sciences.

I lay stress especially on one respect in which adoption of the model of the natural sciences might result in misrepresentation of social science. Social science, being more loosely connected to precise observation and well-defined concept than is much of the natural sciences, does not make progress in quite the same way. Progress is not so clearly a chain, a stairway, a wall being laid. It is not so evident just what observation confirmed a hypothesis, what controlled experiments made knowledge leap forward, leaving mistakes now forever behind. It would be hard to find, in the development of knowledge as to the comparative study of culture, a sequence of observation, hypothesis, experiment, and inference as is provided by the history of our knowledge of diabetes and carbohydrate metabolism. I think there are instances of progression that are roughly comparable, but I think it is important to recognize the "roughly" and to know that instances are scarce.

The development of knowledge as to inherent mental differences between races illustrates, in comparison with the story of knowledge about diabetes, resemblances and differences. Otto Klineberg, who has been working on this subject for many years, has recently reviewed concisely the history of scientific knowledge in this field. As we read his paper,[8] we see that here is a place in which hypothesis and conclusion are revised by improvement of observation and refinement of technique. Between 1910

[6] George Peter Murdock, *Social Structure* (New York, 1949).

[7] Harold Lasswell, "A Hypothesis Rooted in the Preconceptions of a Single Civilization Tested by Bronislaw Malinowski," *Methods in Social Sciences* (Committee on Scientific Method in the Social Sciences, Social Science Research Council, No. 34 [Chicago, 1931]), pp. 480–88.

[8] Otto Klineberg, "Race Differences: The Present Position of the Problem," *International Social Science Bulletin,* II, No. 4 (winter, 1950), 460–66.

and 1926 two American psychologists and a sociologist (Brigham, Goodenough, and Odum) published opinions to the effect that Negroes were inferior in intelligence to white people; the psychologists gave as proof the differential results of intelligence tests. In 1929, however, Peterson and Lanier showed the apparent inferiority of Negro boys to whites in three cities varied directly with the degree of inequality of social opportunities. In 1931 Brigham made a statistical examination of the methods of testing he himself had used in the Army study, concluded that the method was not sound in that it did not eliminate errors due to differences in environment, and repudiated his own earlier conclusion. In 1935 Klineberg published his studies showing that the improvement in test scores made by Negroes who migrated to New York is proportionate to the length of time the Negroes have lived in New York, and in the same year Garth showed that, as samples of Indian and white children tested are made more and more nearly equivalent as to environment and experience, the difference in the success on the tests is reduced. In 1942 Rohrer showed that prosperous Osage Indians did better on the tests than did less prosperous whites. In 1946 Gesell and Pasamanick showed a correspondence between success on the tests and nutrition and general economic level, no matter what the race. In 1950 Goodenough reviewed her work and concluded that the test she had used concealed some expression of environmental influence; accordingly she reversed her earlier conclusion (and so did Odum in 1936).

Although these events do show science advancing, the history of intelligence testing with respect to racial differences is not quite the same as the history of new knowledge about carbohydrate metabolism. One notices that the reversal of opinion did not come as the result of a crucial experiment, or as the end of a series of progressive steps, but rather from the cumulative effect of a good many observations and tests that worked together to produce an impact. And the possibility remains that changes in the general view of the Negro current in American society may have influenced the change as no such changing popular view of carbohydrate metabolism influenced science in that field. Moreover, the new knowledge in the case reviewed by Klineberg is, in a sense, merely negative knowledge. We have learned that an instrument—the intelligence test—which we thought was useful to determine the relative inherent intelligence of racial groups, does not in fact do what we thought it did. Deprived of this instrument for that purpose, we now find that other facts about Negroes and white people make better sense if it is assumed that there are no such differences. No one has yet proved that there are no such differences.

I find it necessary to consider such facts as these about the way knowledge advances in the study of cultures in order to begin to think about the potential impact of frontier research in that study upon general education. What frontier research here has to say to general education is not for the most part a report of positive new knowledge that leaves old knowledge behind. Frontier research in the study of cultures consists chiefly of viewpoints and interpretations as to how cultures come to be, how they change, what their relationships are to human nature and to the personalities of men and women, and how, by or with or in spite of a culture, children grow to be adults. These viewpoints are partly but not entirely inconsistent with one another. On the whole, they have come into existence through some one or few original minds that conceived an explanation or interpretation of man's actions in relation to some body of material that happened to be under observation. Veblen sees the phenomena of consumption in the light of the cultural conventions of a

status-conscious people. Sumner looks at the scraps of descriptive ethnology and reduces man to a mechanical creation of a cultural life that grows in its own way apart from anything man can do about it. Freud looks at the dreams and free associations of troubled Viennese middle-class patients and creates a vast and powerful scheme for the understanding of sick souls. Each of these views then undergoes modification as more and different data are reviewed, and certain of these views are entertained simultaneously by workers who now strive to bring them into some harmony. Thought moves from Sumner's position toward that expressed by Benedict and Margaret Mead in which the culture is seen, not as a die for stamping robots, but as a provision for human dispositions to think and feel: culture is still the maker of men, but the making is seen now as creative and liberative rather than as repressive. Malinowski strives to connect culture—any culture—with a simple list of primary needs shared with the animals and of secondary needs, such as a need for religion and esthetic expression—which are derived from the universal conditions of human living. Murdock, comparing one society with another in a wide sample of primitive societies, endeavors to state some of these universal conditions, and their chief variants, in terms of forms of family life. Meanwhile Freudian thought, now much modified by other healers of the sick and by psychological students of normal people, has profoundly affected the students of the world's cultures—especially the American students—and some of these try to develop a system of ideas that will combine psychoanalytic thought and cultural relativism. We find ourselves reading Kardiner and Linton or the analyses of national character offered by Mead, Bateson, Gorer, and others.

But I say again that these views remain as alternative and partly complementary instruments of understanding. The educated mind is not compelled to adopt one advanced position as correct, regarding the others as merely superseded hypotheses. The educated mind is one that has some understanding of some of the viewpoints as to the place of culture in the understanding of human behavior and is able to see some of the consequences and some of the difficulties of entertaining the one and of entertaining the other. Even on limited sectors of the frontier of research it is not possible to learn what is *the* position of the research workers. There is no such one position. I cite the following facts. In 1949 an anthropologist published a paper in which he announced that, simply by adopting a procedure for toilet training of our children appropriate to the kind of human beings we want to produce, "we are potentially able to shape almost any kind of human personality."[9] This certainly implies a high degree of precise knowledge, including power to predict and control, with regard to the making of personalities. In the same year an experimental psychologist, reviewing the evidence, concluded that the kind of care given the infant does not determine the personality; that several other factors are involved in ways not at all clearly understood.[10] Both of these judgments of knowledge at this frontier cannot be true. These positions are, of course, extreme. But look at the middle position. In a recent publication Mead tells us that it is not claimed that infant care *causes* the kind of personality that prevails; rather we are to recognize "a circular system . . . so that the method of child rearing, the presence of a particular literary tradition, the nature of the domestic and public architecture, the religious beliefs, the political system, are all conditions within which a given kind of personality de-

[9] Weston La Barre, "The Age Period of Cultural Fixation," *Mental Hygiene,* XXXIII (1949), 209–21.

[10] Harold Orlansky, "Infant Care and Personality," *Psychological Bulletin,* XLVI, No. 1 (1949), 1–42.

velops. Attention is focused upon the child's learning processes simply because this is a convenient place to interrupt the circle for purposes of study."[11] If architecture, toilet training, and the political system are a circular system, then, while we may come to understand the circularity of any one cultural system, we are not going to be able to tell parents what will happen to their children if they change the toilet training.

Now I may return to the double answer to the question we are discussing. A program of general education in the field of social science that will continuously express the influence of research upon knowledge is one in which the teachers are themselves carrying knowledge forward and in which the true nature of social science progress is made clear. In making known to young people, some of whom will become social scientists, how knowledge is created, we are to make it known how it is in fact created in social science. This we may do by presenting particular works of investigation and conclusion in their true historic and argumentative contexts. We are to present them as they really affect the next investigator, the next thoughtful and trained mind. Designed experiment and observation, and method conceived as whatever is quantitative or whatever is precise, are not, alone, social science as social science really is. These things lie within a much larger thing, a thing which teachers of social science are themselves in part carrying on. Social science procedure includes the definition and application of basic concepts. In this a good teacher takes part. It includes the construction of explanatory theories organizing concepts into a systematic body of propositions, the evaluation of such interpretive systems in terms of clarity, internal consistency, adequacy to known facts, and fruitfulness—the stimulation of new ideas and of new investigations. All this can be contributed by social science teachers in the course of their teaching. Included also are analysis of underlying ethical assumptions involved in social science knowledge, both theoretical and practical, and analysis of the process of rational deliberation as applied to arguments about public affairs.

Research, as a part of general education, occupies in programs representing social science a place of peculiar difficulty, delicacy, and opportunity. The difficulty and the delicacy arise in part because general education in this area is directed toward communicating several notably *different* things: (1) something about the historical development of our society; (2) something about the social problems of our society and of how specialized knowledge and the scientific spirit may help us to deal with them; and (3) the description, or analysis, of man in society, as a widespread phenomenon, by the use of concepts and generalizations. All this—and method too! General education about man in society, in a degree much greater than is true of general education as to stars or organisms, is to make man ready to act, to form judgments as to the right and the possible, with regard to a great many matters as to which the procedures of science, in the image of some part of natural science, are not ready to offer answers, whether or not they ever will be ready. Part of the subject matter of general education in the social sphere is opinion—intelligent and informed opinion—even in the absence of scientific proof.

So Sibley is right in saying that in general education courses now given there is discussion of "problems of terrific complexity."[12] Such problems have to be discussed, because educated man has to face such problems and cannot wait for science, in the strictest sense of the word,

[11] Margaret Mead, "The Study of National Character," in *The Policy Sciences*, ed. Daniel Lerner and Harold D. Lasswell (Stanford, Calif., 1951), p. 74.

[12] Sibley, *op. cit.*, p. 28.

to catch up with them. When Sibley goes on to deplore that these problems in general education courses "are either treated dogmatically or [are] freely discussed as matters on which any intelligent person has an equal right to his opinions," we join him in deploring such dogma as we may have been guilty of. But we insist that these are questions on which every intelligent person has not only a right but a duty to have an opinion: and part of the duty is to become as intelligent about them as he can. It is the difficult task of the social science teacher to show how to bring special knowledge to bear upon even the most difficult questions. He must do this even if the result is, as it often is, to leave the issue one on which reasonable men may still differ. We cannot wait for precision and quantification before taking up in our courses discussion of personality formation, Point Four programs, or world government. In developing in future citizens the capacity to know when one opinion carries more weight than another, the teacher of social science cannot restrict himself, and should not, to the patterns of advancing knowledge which depend upon quantification and linked hypotheses and proofs from series of controlled experiments and observations. In so many fields these things will be lacking. But the important thing to add is that, in helping to make future social scientists, the general education teacher should not limit himself to these things either. By teaching how valid knowledge of man in society really goes forward, we do what we ought to do both for general education and for making social scientists.

The difficulties are matched by unusual opportunities. Just because social science knowledge advances in part through influence of the consideration of alternative viewpoints on the same or similar facts, the connection between teaching and what I would here call research, were it not for the sensitivenesses of which I have spoken, is peculiarly close. The social science general education teacher, as he joins with his colleagues representing different training and different influential viewpoints, advances knowledge as he teaches. To develop this aspect of his work, it is only necessary to formalize the staff discussions which underlie the teaching. There results a seminar: a forum for the development and testing of those viewpoints as to central questions about man in society which, in a looser way, correspond with hypotheses in physics or physiology. The social science teaching staff can make contributions to the gaining of new knowledge which departmentally organized staffs find it hard to make. The variety of teaching and viewpoint and the coming-together to plan a program of teaching involve just those operations of the mind upon fact which make for new knowledge in our field.

On the other hand, it is probably true that social science teachers would be better teachers, as well as better contributors to new knowledge, if they were more closely connected with the precise and limited investigations than they are. In order to create a general education in place of a number of competitive preparations for specialized life, we have in a number of institutions established independent courses in general education and given their teachers autonomy. These necessary conditions for general education are, of course, to be firmly retained. But I think that in making a program of general education we have produced teachers who have little direct part in the specialized and more precise aspect of the pursuit of knowledge. It becomes necessary now to provide some of these teachers with opportunities to carry on such work and to participate in the communities of specialized investigators while they retain their membership in communities of the less specialized. They are the link between social science conceived as physics or physiology and social science as it really is. To take this

remedy, which I named first, we have to solve problems of the organization of teaching and research faculties, problems of relationships between people who are primarily teachers and people who are primarily devoted to advancing knowledge, and problems of time, money, morale, and motivation. The more specialized research that some teachers might well be doing is not, necessarily or at all, research into education. It is research as to something about man in society.

The teacher of social science in general education has peculiar advantages in bringing, into his teaching, experience with the design and conduct of observations to some degree controlled. The materials of social science—some of them—are right at hand in the community, in the schoolroom, in the day-to-day experiences of members of his class. No difficult experimental setup is required to put students to observing their corner store. Interviewing can be done anywhere. The recording and graphing of the temporal distribution of students entering the classroom before or after the bell rings will produce a skewed curve. The scientific method, in its simplest and most basic character, as objective observation with regard to a defined question, can be practiced more easily in connection with man in society than it can be practiced in astronomy or geology or comparative anatomy. Some of these things can be done by the teacher before the student or be done by the student. Man is the most interesting and the most immediately present of all that surrounds the learner. How to find out something about man can be, in the limited sense of precise observation and limited inference, a part of general education. But it would be a wrong to both general education and the training of social scientists to show this finding-out in this limited sense only. If the word "method" is to be reserved for the precise and limited procedures, then let us say that both general education and social science require much more than method. It is so much more that, if we choose these terms, "method" becomes much the smaller part of what the social scientist must know, and a very small part indeed of all that an educated man must know. To make the specialized work fruitful in the larger context of thought and discussion, to be a link between "method," on the one hand, and learning and full preparation of social scientist, on the other, can be a principal function of the general education teacher.

EDUCATION AND POLITICS

Nathan Rotenstreich

If one tries to clarify the mutual relationship, both of similarities and of dissimilarities and even of contradictions, existing between education and politics, one may start anew from the problem of education and look from it upon politics, or one may start from politics and from there throw light on education. But such a procedure is not necessary. One may elucidate in general the nature of human activity in its various branches and try to determine within this scope the nature both of education and of politics and their mutual relationship. By choosing such a procedure, we may be able to maintain the equilibrium and are prevented from drawing rash conclusions as to the preponderance of one domain over the other. In so far as evaluations or value-judgments are called forth, these will be a result of a synoptic and not of a partial view.

The fact that we try to elucidate the question of the relationship between education and politics points to the presupposition that these two manifestations of human activity and human interest are not entirely different from each other, so that no meeting ground could exist. Indeed, there is some common ground.

The first distinctive feature of the similarity between education and politics lies in the fact that both exist in that sphere of activity which might be called "the sphere of means." Education is not contained in itself; its motive lies in the objective toward which it is directed. The reason for politics is not contained in itself but in the goal it envisages. These two branches of activity are functions of the human society. They are functions of society for the sake of society. If we juxtapose education and politics, on the one hand, and science and art, on the other, we will discover the distinctions between these opposed domains. Science, for instance, is guided by the principle or value of truth. Science derives its justification from this principle, as art derives its justification from the value of beauty. Indeed, science can be employed as a means to an end like biology, which is employed as a medium of medicine, like medicine, which is employed as a medium of hygiene, or like physics, which is becoming a medium of techniques. Even art becomes a means, as in the case when it is employed in the improvement of housing conditions or in the styles for houses of prayer. But this application of science or art, that is to say, their being converted into means, is in reality a form of drawing of conclusions and these conclusions do not alter anything in the content either of science or of art. Even in the case when science is not employed to a definite end, it remains meaningful. It is perhaps one of the signs of the depravation of civilization that society is anxious to find social applications of domains justified by principles and resting on values. Indeed, science is not a meaningless game; its reason lies in its principle (i.e., truth), but its reason does not lie in the society in which science becomes manifest or in which scholars are living. While education and politics are from the beginning located in the domain of society, they are functions of society for society and are not functions for the sake of principles valid as such.

Here, indeed, education and politics

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face one of their most difficult problems: Is this involvedness in society free from values, for instance, from ethical principles? The problem of ethics is immanently linked up with politics. In so far as the function of politics is to materialize human aims, or at least to assist in their materialization, politics is necessarily linked up with the value of the aims or with the ethical principles embodied in it. Education has been described as an endeavor to transfer the ethical imperatives to youth. That is to say, in so far as the purpose of education is to serve an aim, it faces the problem of the nature of this aim from the point of view of its ethical value. The very fact that education and politics belong to the intermediate sphere of social means makes these activities so sensitive toward the wishes which they are intended to serve. But the distinction between science and education remains in force: science or knowledge in general is to serve the discovery of truth; education is to serve society. In so far as society is linked up with values, the education carried out within it—and the same is to be said regarding politics—is linked up with values. The connection between truth as value and science as an activity leading to this value is a direct connection, while the connection of education and politics with the values is an indirect one—one that uses the medium of society. In other words, the principle of truth inheres in science as the principle of beauty inheres in art, while the ethical principle inheres in education and politics, in so far as it inheres in the society of which education and politics are functions.

This leads us to the second feature of similarity between education and politics. The dependence of education and politics upon society and not upon values means their dependence upon a particular society existing in a particular situation. Attempts have been made to discover the sociological basis of science, that is to say, to show the dependence of science upon sets of social conditions. But in spite of this, and granted even the justification of these attempts, one cannot disregard the fact that the effort to disclose the lawfulness of the phenomena is a distinctive feature of science in all its stages. If the ideal of knowledge is the discovery of lawfulness in the plurality of phenomena, then this ideal is a permanent element in the development of knowledge. But in regard to education and politics the question arises: Have these branches of activity a permanent idea, beyond the particular social set of conditions in that particular historical hour? Or, if we are to formulate this point in a more moderate way, we may say: The dependence of education and politics upon social data is at least closer than that of science. But this dependence upon society does not mean the annihilation of education and politics. If this were the case, then education and politics would not create fields of activity for themselves. For the characteristic mark of these activities is—and here we find the third feature of similarity between them—that they establish spheres of their own. The relationship between parents and their children is originally not an educational one. It is a relationship established upon the biological basis of birth or by the economic dependence of the children upon their parents. But on the basis of the biological or economic relationships the educational structure is set up, that is to say, parents do not appear only as bringing the children into the world and providing for their physical needs but also as educators; and the children do not appear only as dependent but also as educable too. The relationship between the teacher and his pupil is essentially not an educational one. If we abstract the mutuality of the relation created between them in the sphere of education, we are entitled to look upon this relationship as one between partners differing in age, and this relationship is not yet an educational one. Thus on the

fundament of a pre-educational relationship, rooted in biological or psychical data, an educational relationship is being or is to be established. The same applies to politics. On the basis of existing relationships in a society such as economic, ideological, religious, etc., relationships, a particular relationship is established, namely, that between government and subjects or the relationship between the various social forces fighting for their part in government. This point of similarity between education and politics might be formulated in the following way: These branches of activity, although dependent upon society, create social spheres of their own. Not only are they dependent upon social factors but they themselves create social factors as well.

Education and politics are activities. They are forms of practical occurrence among men. But this practical aspect is not a shapeless one. It is connected with theory. The practical and the theoretical aspects are linked together, and the chief difficulty of their analysis lies in drawing border lines between these two aspects. It has been said that education is an art, and the same applies to politics. However, they are not blind arts but arts rooted in theory. Socrates, who criticized the custom of imparting learning to those who are theoretically unfit, criticized also the fact that politics is managed by those who do not possess the capacity of contemplating. The more social life becomes complicated, the denser becomes the network of relations between societies, the more increases the need of theory and knowledge. The educationist and the politician require learning—this is the theoretical aspect. But learning is not sufficient—this is the practical or skilful aspect. Thus the combination of theory and practice is a characteristic both of politics and of education.

Here another point should be stressed: Both in politics and in education man is seen from two aspects—the educationist is a man and his pupil is a man, too, and the politician managing a society is a man, while the society managed by him is a society of men. Both in education and in politics man is the subject and the object of occurrence taking place in these domains. This fact may sometimes confuse the boundaries between the partners, as in the case when the pupil educates his educator, and this is the highest educational act; and as in the case when the managed society manages itself, and this is the objective of democracy. The fact that subject and object are men is the background of this mutuality, and mutuality is the essence of the educational and political acts, or at least of educational and political aspirations.

But this mutuality and similarity imply a transition to the other field—to that of dissimilarity between education and politics. Let us start with the question: Has self-education a meaning? Has self-politics a meaning? In other words, the educationist educates himself, that is to say, the same man is both subject and object. Does the politician manage himself? It seems to be clear that the politician manages himself in so far as he is a member of the society managed by him, that is to say, in so far as his acts are directed outward. Education has a meaning even within the scope of a single individual, and therefore the same man may be both subject and object. In politics we remain within the scope of the individual, but we split him up into subject and object. In education we identify the subject with the object, or at least we strive toward this identification.

The fundamental category of politics is society, while the fundamental category of education is the individual within society, in the two aspects of this relation, the integration of the individual into society through the influence of society on the individual, as stated by Natorp: "We educate the individual *in* society *through* society and *for* society." But "through society" must confine itself to the span of life which will be that of the individual.

The individual even when he acts for society does not merge in it. Therefore, as the fundamental category of politics is society, politics knows tensions between societies and not the tension between the individual and society, whereas education is immanently connected with the tension between the individual and his society and with the need to establish an equilibrium between the two but at the same time to maintain their own character. Politics knows the individual only in his function as the master of a political ship. Those led by him submerge in the sea of anonymity. On the other hand, education knows the individual even in the status of being educated.

This leads us to a fuller discussion centering around the distinction between shaping and managing.

Education is a manifestation of human activity by which man strives to shape himself. In every kind of education two objectives meet. The one objective of education is to preserve the values of the civilization of a society handed down from generation to generation. This preservation, like every preservation in the realm of the spirit unlike that in the realm of matter, is carried out not by freezing but by activation, not by immunization against its being in force but by putting it in force. Preservation of values of civilization is possible only by imparting them to living human beings. It is possible only when there exist living men connected with the values and acting in accordance with them. The actual experience of living men is the regenerator of values of civilization. Here we find the essential dialectic of civilization. The objective assets like language and works of literature and of thought need the *experience* of the living man; they need his feelings and reactions. Without them these assets become historical relics. The existence of an objective civilization is dependent upon the current of feelings and experiences of men living in it. The wishes of civilization not only build up men but are built up by them. Education is the bridge stretched between objective civilization and living men. Education makes of objective civilization a force shaping man, and it makes man the maintainer of objective civilization.

But this goal does not exhaust the full meaning of education. Education endeavors to shape man not only in order to make him the keeper of the cultural heritage. It shapes man for his own sake, in order to develop his personality. Education is not only a function of the existing assets of civilization, but it is also a function of the creative powers which have not yet become crystalized in assets. Education is a function of the cultural past and also a means for the materialization of the cultural future, that future which is borne by the creative power of personalities. Education is the pioneer of the unexhausted opportunity in culture. Therefore education must insist on individuals, since it looks upon them both as bearers and as creators of values. The essential feature of the educational dialectic lies in this tension between the material objective aspect of a given civilization and the emotional aspect of living man, qua living man and qua bearer of the creative opportunity. The practical difficulty of any education is to find the narrow path between the two poles. Education is always threatened, on the one hand, by the possibility of incorporating man in the given assets and making him a meeting ground only, but, on the other hand, it is threatened by relativism, that is to say, by placing undue stress on emotional factors of the personality and by thus clearing the way for free expression without any weight in objective values.

The theoretical presupposition of any educational act lies in this conception of the polarity of man. Educated man is open to given values, but he is open to the creation of new values, too. Education is shaping, since it cultivates the two abili-

ties – both the ability of identification with actual existence and the ability of passing beyond it. Each educator is a pupil and each pupil is an educator, since this polarity inheres in man as a historical being regardless of his role in the act of education.

There are three instruments of education in its dialectical effort. Education employs the function of *imparting knowledge.* It is a scholastic activity, since it endeavors to use knowledge to build a bridge between man and the values which are to serve as the shaping factor of man's personality. Education further comprises the activity of *cultivating the abilities* of the educated one in order to make him fit for absorbing knowledge, in order to bring him to a self-identification with the subject of learning qua value, and in order to make the soil fertile for the production of new assets of civilization. Ability is that part of personality in which we find the aspect both of consumption and of production. In cultivating abilities, we cultivate the instrument needed for the two objects of education—both preservation of the existing values and production of new ones. And in the last instance, education endeavors to *evoke the interest of man;* evocation of interest is a means both of abilities and of learning. Interest turns the abilities toward existing values, and it directs the abilities toward efforts to create what does not exist yet. Interest causes the subject of learning to be absorbed and abilities to become active.

To sum up, education is defined as shaping, since in education and through it an activity takes place in which man builds his personality and at the same time builds the civilization beyond his personality. Here man is both subject and object; he is the shaper and the one who is shaped. Here we find room for the individual, but the individual crosses his limits and enters the objective realm of values. Thus, within the educational field the individual is not a Robinsonian one; such an individual may perhaps be a sociological but never an educational category. In education the individual occupies his status, since he is the bearer of the opportunity, that is to say, he indicates the possibility of the creative act which will release him from his subjectivity. Education is shaping, since in the act of education man is built by what is no longer man and since here man builds what is destined to cease to be man only and is to be values of civilization.

Max Weber has defined politics in stating that it is "every kind of activity of a managing nature." Here we wish to consider one fragment of the scope of managing activity only, namely, managing the common interests of society. This managing is directed toward two chief regions: that which lies within and that which lies outside. Politics within organizes the relations between men, their classes, and social pursuits. Politics directed outward organizes the relations between society and society, between state and state. In brief, in making a study of politics, we intend to deal with topics which are in the common sphere of the state or society.

Politics according to this description is carried out by the government, that is to say, managing is an attribute of a particular social force, the managing force qua government. Politics involves three aspects: the direction of managing, the social force which carries it out, and the struggle within society with the aim to take part in this social force in order to direct managing. In other words, politics is to be defined from two angles: that of the objective and that of the social force striving to materialize it. The sociological aspect of politics stresses the social force striving for the objective, striving for it both from the position of governing and in the willing effort to become the ruling power. The struggle for governing is an essential feature of politics.

These two aspects of politics might be brought into relief by employing the

classic definition of Aristotle of the nature of a state. He said that the state *comes to be* for the sake of mere life but it *exists* for the sake of good life. In transferring this distinction to the terminology used here, we may say that politics came into being for the sake of managing but that it exists for the sake of better managing. Thus in every politics a tension between two trends is to be found—managing as such and the striving for better managing. This tension may be formulated as the tension between the trend toward governing and the trend to make governing an instrument to attain an objective being beyond it, like the materialization of equality in society. Politics is always threatened by this tension between managing for its own sake and managing for the sake of an objective that lies beyond politics in a narrow sense, that is to say, a social or moral objective. The political struggle in modern society, bound up with the rise of socialism, is also connected with this tension between the trends: Is the managing of society the ultimate goal, or does politics want to be an activity toward changing the very basis of human life and thus directed toward an objective beyond politics?

But even in the case when politics oversteps the boundaries of mere managing, it does not pass beyond the scope of matters belonging to the framework of society and those which are conditions of good life but are not good life as such. Even when politics imposes on itself the mission of building up society based on freedom and equality, it imposes on itself the mission of establishing circumstances in which man will be able to cultivate values and to create them; but politics cannot determine the values themselves and the way to their creation. Politics in this case endeavors to build a society in which this process of shaping man will take place, but it does not appear instead of shaping man. The framework of social life is not the meeting ground of the past and the present, in which the process of shaping occurs. From here two conclusions regarding the position of politics in human existence must be drawn. Politics is, on the one hand, a primary function if compared with the function of shaping, since it is concerned with elementary matters. Here we are right in applying the Roman proverb—"first to live and then to philosophize." Since politics is connected with organizing life, it precedes its intellectual shaping. But, on the other hand, we may stress the danger of every politics, namely, the danger of politics detaching itself from the domain of a framework and its passing into the domain of content, one danger of making the framework into content. This danger manifests the dialectic of human activity called by Wundt "heterogeny of aims," which means that an activity which in its origin is one of means becomes one of ends. This danger increases in society with the progress of the crystallization of a governing group which is inclined to look upon its work as upon an end in itself. We have said above that both politics and education are located in the sphere of means. We now shall express this more exactly and say that education is a means but that politics is a means for means.

Education as shaping man is connected with the tension between the values already existing and those which will come into being in the future through the creative personality shaped in the present. Education has a distant horizon, distant in the past and in the present, while politics by its very nature deals with what is near. A military alliance for twenty years seems in politics to be a lasting arrangement that allows a long breathing spell. While in education aims of twenty years' distance are meaningless, since education grows organically: the values transmitted are transmitted organically, and those created are created organically. Indeed, politics must

find an equilibration; sometimes it gives up what is near in order to maintain what is far, but sometimes its concentration upon what is near—especially in times of emergency—involves an ignorance of what is far. We have just experienced this feature of politics in the recent period when the near goal absorbed every consideration of a far goal, and, once the war ended, all matters that had been ignored appeared in their urgency, demanding full consideration.

It has been shown that both education and politics lie in one and the same field, i.e., in the field of means employed by society. But education is a means of shaping, while politics is a means of managing. It has been shown that education and politics are means employed by society. Therefore they lie in a common sphere and spring from a common source. Here we find the point of departure from which we may point out the confusion of concepts and boundaries characteristic of this issue. The connection of education with the society which manages its affairs through politics does not imply the connection of education with politics. In other words, the dependence of education and politics upon a common sociological basis does not mean that they are interdependent. He who draws a conclusion from commonness of fundaments to the commonness of buildings erected on these fundaments is guilty of two fallacies. First, he confines the extent of social life to politics, that is to say, he contracts the totality of life into the field of managing only; second, he naïvely assumes that a common source involves identity, or at least interconnection of rivers springing from the source. But this is not the case in the domain either of nature or of culture. The fact that poetry and daily speech result from a common source, namely, from language in general, does not imply a simple identification of poetry with daily speech. It is clear that in the realm of civilization various channels of activity and meaning are created, in spite of their sociological and historical common origin.

Thus the nature of relationship, if any, between education and politics, is not exhausted through the assumption of their common source. Education needs politics in so far as it needs society to be managed in such a manner as to make education shaping possible. It needs such politics as does not overstep its legitimate borders, that is to say, politics which does not pretend to serve as the content of intellectual life but is bent on establishing the framework in which intellectual life is produced. Education needs politics which respects the domain and preserves the autonomy of education. Thus education needs politics which is aware of its limits and the field beyond its limits, while politics needs men whose shaping will *inter alia* contain the elements of political interest, such shaping as will make them capable of political activity and will not commit them to indifferent contemplation. Politics which clears the way for education does so not only for the sake of education but even for its own sake: the educated man who possesses the combination of knowledge, ability, and interest is due to be the bearer of politics. Thus politics which gives up its monopoly in *savoir* education makes this step for its own benefit too. This is one of the cases when it is worth while for politics to give up that which is near in order to win that which is far. Governments, as it has been said, are like clocks regulated by men. Governments which care for themselves must care for the men who set them up.

This reciprocity can be and is often destroyed. It is destroyed in the moment when politics oversteps its boundaries and pretends to be the content of education and its goal. Politics becomes nervous and afraid that it will disappear from the scene and cease to exist. Therefore, it demands that the educator and the pupil look upon politics as value and

not as means. This nervousness of politics becomes apparent in what is to be called the "politicizing" of education. This means that politics invades the substance of education, making education concerned with what is near, converting shaping into managing. In this case education is attacked, since the politicizing of education does not emerge from within but comes from society ruling both education and politics. Society wants to prevent such an invasion, and therefore it allows that education establish itself as an institution. Education by its very nature stands aloof. It must keep some distance between itself and the environment. Indeed, the surrounding reality strikes against the gates of education, but education has no alternative but to keep the tension between following this call and keeping distant from it. Education must remain an island or at least a peninsula in order to remain that which it is; it needs, on the one hand, politics which acknowledges its right and, on the other hand, an inner life which knows how to use the right accorded to it.

We may throw light on the connection between the two fields of human activity from another point of view as well. The degeneration of politics is a departure in education, while the degeneration of education is a departure in politics. At the moment that politics, the object of which is to manage the affairs of society, is not prepared to stand up against the evil by using force and believes that it ought to fight the evil by shaping and sublimating it—at that moment politics becomes depraved. It gives up its very nature and tries to become education. This departure can be compared with the behavior of the master of a ship who, when attacked by fishes, tries to moralize to them. The function of managing is not a function of educating. The moment one stands up against, or, more exactly, the moment he is confronted with the evil, which is using force, he has no other way but to use force too. But force is a means of politics and not a means of education. Our generation had an actual experience of such a confusion when pacifism wanted to be a stronghold against destruction. The moment such a pseudo-educational politics tries to use means of education, it has undermined education in its truth, that is to say, in its limited meaning. The inability of education to face the evil using force diminishes the faith in education. Supereducation is in reality undereducation.

On the other hand, the deviation of education takes place the moment it detaches itself from the intellectual and the moral values and from the creative power of actual man. At that moment education becomes managing for the affairs of the pupil and arranges for the pupil to spend part of his time in institutions; then that is the moment when education loses its true authority, the authority resting on values. At that moment the educator appears as the dominator, as one who usurps authority. Thus politics may deviate into education while education may deviate into politics.

Schleiermacher, it may be recalled, said that if we say that the object of education is to cultivate the growing youth in order to make them fit for the state as it is, we only obtain this—that noncompleteness will become eternal and no improvement materialized.

THE LIBRARY IN COLLEGE INSTRUCTION

Herbert L. Leet

THERE has been a growing concern on the part of librarians, other educators, and educational agencies with the quality of college instruction and the proper use of the library in college instruction. Louis Shores, dean of the School of Library Training and Service, Florida State University, cites an article in which "a student was quoted directly as saying if his teachers would turn him loose in the library, he could learn more about his subjects than he possibly could in an equal number of classroom hours." This quip, like the old saw about Mark Hopkins and a student on the log, is an example of one of the many comments on the quality of college and university teaching which have appeared in all kinds of publications. There has also been a bumper crop of books on "how to teach" and reminiscences of and about great teachers. Paul Klapper[1] properly ascribes the appearance of many recent publications on teaching techniques in higher education to the concern with the quality of much college and university instruction, the causes of which are not easily determined and the cures not readily apparent. It is with the library aspect of the educational program and, in particular, the role of the library in general education programs that this paper is concerned.

An examination of the vast amount of material on the subject of general education which has appeared in the past decade reveals a tremendous number of writings on the varying definitions of what constitutes a general education, the aims and objectives of general education, and the theoretical approach to the teaching of general education courses in the various disciplines. And yet, there are comparatively few curricular materials with which the teacher can make the adjustment from the highly specialized form of preparation which he has recently completed to the general education program upon which he is about to begin. Both the new instructor and the instructor already in the field can benefit from the wise counsel of such studies as the four volumes of the "Cooperative Study in General Education Series," sponsored by the American Council on Education, the four volumes published under the editorship of Earl J. McGrath, the Harvard Report, Columbia's *A College Program in Action*, Chicago's *The Idea and Practice of General Education*, and many others; but specific preparation for a teaching career somewhere along the line is infinitely better. And in this training cannot the prospective teacher learn to employ all the resources at his command in the institution where he is to teach?

The library plays a vital role in college instruction—with this no one disagrees. But in a study ten years ago Harvie Branscomb concluded that undergraduates did not make very much use of the library and "college faculties are making only a very limited use of the library in their teaching work."[2] More recently Chancellor Branscomb pursued this theme again:

[1] "Current Guides to Effective College Teaching," *Journal of General Education*, V (July, 1951), 280–85.

[2] *Teaching with Books: A Study of College Libraries* (Chicago: Association of American Colleges and American Library Association, 1940), p. 3.

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Two developments in academic thinking concerning general education will . . . have effects upon college libraries. The first is the growing recognition that it is to the liberal arts college that we must look for the preservation and transmission of those broad principles of understanding and of action which constitute the tradition of western civilization. . . . The second development . . . which can seriously affect the libraries is the trend toward a greater number of prescribed courses. . . . To be most useful [the librarian] . . . will know the problems treated, their major sources, the bypaths and illustrations suggested by the syllabus, the objectives the courses are endeavoring to achieve.[3]

Both principles are generally accepted, but insufficient emphasis has been put on the latter in many institutions of higher learning in this country. The librarian must have as complete information on these points as possible in order so to direct the library program that maximum use of library resources is attained. This means that there must be close contact between the library and the agencies of the institution—the administration, the curriculum committee, and the divisions and departments of the faculty—which define objectives and establish the curriculum. The librarian must know particularly about new course offerings or new methods of approach to teaching subjects already in the curriculum, since purchase of duplicate copies of books, personnel to provide adequate service for the new requirements, and general library administrative policy are directly affected.

The building of any adequate library collection and the furnishing of services is, of necessity, an enterprise requiring the co-operation of the individuals concerned. The library of the new liberal arts college with which I have been associated was built largely on the basis of faculty recommendations. This does not in any way excuse the librarian from keeping informed of the objectives of the courses taught in his institution and of making a periodic examination of the objectives of the library, to see how well he is serving these institutional needs. It is also the librarian's duty to survey the book collection from time to time, in order to discover gaps which may exist and to take suitable measures to correct this situation.

The ideal college library situation exists where the faculty, through co-operation with the library, recommends purchases for and use of the library collection and where the faculty and library together bring these materials to the attention of the student. The library, too, plays its useful role in this relationship by suggesting additional materials which may have been overlooked by faculty members or other uses for materials which have already been used in other ways. In *The Library in College Instruction*[4] Louis Round Wilson and his collaborators have listed and explained several of the ways in which this faculty-library co-operation may be achieved—methods considered revolutionary in college library thinking twenty years ago—ideas such as having members of the library staff visit classes to learn more about course content and teaching techniques and to become better acquainted with students and faculty members, as at Stephens College; the librarian a professor of history and chairman of the Social Studies Division, as at Bard College; the librarian playing the dual role of dean of instruction and librarian, as at Stephens; frequent informal conferences of students, faculty members, and librarians for such projects as the compilation of bibliographies, as at Reed College; or, as at a number of colleges, faculty members available for consultation in the library during set office hours. In reference

[3] Harvie Branscomb, "The Future of Libraries in Democratic Institutions," in Harvard University, *Place of the Library in a University* (Cambridge: Harvard University Library, 1950), pp. 68–69.

[4] Louis Round Wilson, Mildred Hawksworth Lowell, and Sarah Rebecca Reed, *The Library in College Instruction* (New York: H. W. Wilson Co., 1951).

work, as Guy Lyle has pointed out in another recent volume on librarianship, "the teacher works under a distinct handicap when the reference librarian is not familiar with the purpose of class assignments; the reference librarian is limited in the help he can give students without an alert faculty which requires, appreciates, and uses his knowledge."[5] The practical difficulties of achieving such an objective—particularly in a large college—are apparent, but in general education courses the effort brings rewards.

A typical faculty member will send his reserve lists to the library well in advance of class assignments; will appreciate and read notices of the receipt of new materials in his own and related fields;[6] will frequently visit the shelves to take a good look at these items; will do a great deal of reading guidance in and out of the library; and will visit it with small groups of students from time to time. He will also request and receive the assistance of the librarians from time to time in connection with a particular teaching project.

Four publications[7] have appeared in the past decade, all having unity of agreement on the importance of this subject of faculty-library co-operation for the improvement of college instruction. And yet an examination of the bibliography on general education, which has appeared in one of them,[8] indicates only five items which deal specifically with the use of the library in the general educational program. It is small wonder that some library materials are used too exhaustively in college instruction, to the exclusion of others. In his chapter on "The Library in General Education" Mr. Shores says:

> The dissatisfaction with library use in undergraduate instruction can be said to result not alone from the quantity of library use but from the quality of the materials assigned and from the nature of the assignments. Across the nation in college after college the most characteristic library assignments are still inclusive pages in text or reserve book. This pattern of undergraduate homework carries with it too often an undue emphasis on pages that parallels overemphasis on credits, with the resulting loss . . . of an essential appreciation for knowledge. It is this rut of text and reserve overdependence and the almost wholesale neglect of a vast and varied collection of library materials that has been largely responsible for inadequate library use in undergraduate instruction.[9]

Why does this failure to recognize the resources of the library exist? There are at least two answers, perhaps more. One lies in the preparation of the college in-

[5] *The Administration of the College Library* (New York: H. W. Wilson Co., 1949), pp. 171–72.

[6] Notification of faculty members at Harpur College—a faculty of sixty—is achieved by a chain of co-operation extending from the library through the division chairmen, to the faculty member originally ordering the materials with the approval of his division chairman, to other faculty members of the same division, and back to the office of the division chairman, where a master-file is maintained. This serves a threefold purpose. It affords the division chairmen two opportunities to become aware of the type of materials ordered by their staff, informs all faculty members in the same division of what materials their colleagues have considered significant enough to order for the library, and provides a file of library materials devoted to the purposes of the division. The device used is an easily filed 3 × 5-inch pre-carboned slip which has been typed by the library order department at no extra effort at the time the book was ordered from the jobber (cf. Edwin B. Colburn, "The Value to the Modern Library of a Technical Services Department," *College and Research Libraries*, XI [January, 1950], 48–50).

[7] B. Lamar Johnson, *Vitalizing a College Library* (Chicago: American Library Association, 1939); B. Lamar Johnson and Eloise Lindstrom, *The Librarian and the Teacher in General Education* (Chicago: American Library Association, 1948); W. Hugh Stickler, James Paul Stoakes, and Louis Shores, *General Education: A University Program in Action* (Dubuque, Iowa: W. C. Brown Co., 1950); and Wilson *et al.*, *op. cit.*

[8] "A Bibliography in General Education, 1940–1948," compiled by Edwin R. Walker and LaNelle Vandiver in Stickler *et al.*, *op. cit.*, pp. 217–80.

[9] Stickler *et al.*, *op. cit.*, pp. 164–65.

structor. The emphasis on research materials and research methods has made a good specialist out of him, but a poor general educator. The other answer lies in the preparation of the librarian. Some librarians and some library-school faculties are, of course, aware of this need. Since professional library schools have come of age, courses of instruction have been modified and improved to a degree, but Nathaniel Stewart has recently charged that the end-result of these courses was still "such that the college library seems to bear closer kinship to the discipline of librarianship than to higher education . . . [in spite of] repeated references to 'the library and the objectives of the institution.' "[10] It remains to be seen how much improvement will result from the newest library-school programs.

But the present situation is the day-by-day one in which we have librarians and we have faculties. It is with interest that one turns to the Wilson-Lowell-Reed "Syllabus on the Improvement of College Instruction through Library Use"—the subtitle of *The Library in College Instruction*.[11] Improve the preparation of college librarians and instructors and thus improve college instruction and, per se, the use of the college library: this is the thesis of the volume.

The Library in College Instruction is, in the main, a collection of bibliographies arranged in units. Unit I is a carefully selected list of general bibliographical sources useful to the college instructor, while Unit II is a series of teaching materials for general education at the college level, arranged under the typical general education divisions—the humanities, the social sciences, and the biological and physical sciences. Units III, IV, and V deal, respectively, with the selection of materials for effective college instruction; reading guidance: a function of the entire faculty; and the college library as a teaching instrument.

In preparing the syllabus, Wilson and his associates sent out a questionnaire based on a prospectus indicating the general nature of the proposed publication and soliciting suggestions concerning the need for it and its possible usefulness. Responses from two hundred members of college and university faculties and library staffs resulted in several important changes in the organization and scope of the work. A second questionnaire addressed to the librarians of a number of colleges which have carried on significant experiments in integrating library use and instruction brought forth pertinent information concerning specific practices which the institutions felt had considerably increased the effectiveness of their educational programs.[12]

It is not too much to say that faculty members having a thorough acquaintance with this book will be able to improve the quality of their college teaching. There has been an urgent need for a book of this type. Although any educated reader may object to the inclusion of some titles and the omission of others, it appears that the basic library list in the various disciplines is as representative and adequate as any list can reasonably be expected to be. A check of the titles included shows that the Harpur College Library—a new library—contains approximately 75 per cent of those listed—largely on the basis of recommendations of a liberal arts faculty dedicated to a general education program. There is nothing startling about these bibliographies. Long-established colleges and universities have had the greater portion of these books in their libraries ever since the dates of publication. An examination of the few bibliographical lists which have

[10] "Training the College Librarian for a Career in Higher Education," *Educational Record*, XXXI (April, 1950), 124.

[11] *Op. cit.*

[12] This material summarized and in part quoted from the Preface of Wilson, *op. cit.*, pp. 4–5.

appeared since the historic Shaw and Mohrhardt lists,[13] published in the period 1930–40, validates the publisher's claim that, with the inclusion of many publications of the 1940's and some books issued in the last two years, this is the most up-to-date classified list of books for liberal arts and junior college libraries now available.

The Library in College Instruction can serve several useful functions. It is certain that it will assist the subject specialist to fit into the broader curriculum of the college. He will also have a better knowledge of the survey type of material with which he will be much concerned in many of the undergraduate courses which he will teach. It will also serve to acquaint the instructor with many of the problems of administration of the library.

The general bibliographical sources useful to the college instructor in Unit I are excellent and generally complete. (However, microcard, microprint, and micro-offset materials were unaccountably omitted from the lists of audio-visual materials. One has to assume that the authors felt that the time was not yet ripe for inclusion of such material.) Arrangement of the unit is by such topics as subject bibliographies and bibliographic form and general bibliographies and catalogues of value to the college instructor. Included are union catalogues and printed catalogues of great libraries, in addition to current national bibliographies and book-trade records and bibliographies of bibliographies. Also included are special lists, such as periodical and newspaper indexes, lists of serials, audio-visual materials guides, abtracting services—notably in the sciences, psychology, and the social sciences—and a final section on library surveys in individual, city, state, and national libraries.

The bibliographies of teaching materials for general education at the college level in Unit II are certain to arouse the most discussion among instructors and librarians. A general criticism of this section is the inclusion of so many course textbooks. This is particularly true in the fields of political science and economics, where there is a significant number of introductory textbooks which have the same basic objectives, and in the field of history, where too many texts cover the same period. There are likewise too many texts in the field of science. Contrariwise, there is a noteworthy dearth of titles on the Soviet Union throughout the bibliographies in the field of the social sciences.

Annotations indicating the subject matter of the titles listed, together with some indication of the reading level of the materials included, would have increased the usefulness of the bibliographies for class instruction.

Another point to be considered in connection with this unit on teaching materials is one that Wilson himself has raised concerning "the validity of standard lists of books for instructional use in colleges with different teaching personnel."[14] He cites the study of recommendations of books for introductory sociology courses made by Richard Logsdon,[15] in which the "evidence indicates that a given instructor would be alone in about two out of every three instances in which he recommends books for use in his courses and for purchase by the library. Logsdon suggests the need for better co-ordination among the instructors in specific subject fields and for a definition of the aims of instruction in various areas of the college curriculum.

[13] Charles B. Shaw (comp.), *A List of Books for College Libraries* (2d preliminary ed.; Chicago: American Library Association, 1931), and *A List of Books for College Libraries, 1931–38* (Chicago: American Library Association, 1940); Foster E. Mohrhardt (comp.), *A List of Books for Junior College Libraries* (Chicago: American Library Association, 1937).

[14] Wilson *et al.*, *op. cit.*, p. 229.

[15] "The Instructional Literature of Sociology and the Administration of College Library Book Collections" (unpublished Ph.D. dissertation, Graduate Library School, University of Chicago, 1942), p. 14.

He considers this a precondition to valid book selection for instructional purposes. Logsdon is supported in his findings by Ruth Walling,[16] who concludes on the basis of her study of books required for survey courses that the variations among institutions are too great to warrant any generalized conclusions which would be meaningful to the library administrator."

If these findings are valid, it would appear that Wilson has questioned the usefulness of his own bibliographies. The needs of Harpur are not those of Harvard, any more than those of Stephens are the needs of Swarthmore, owing to the variations of curricular needs as determined by the objectives of the institutions. However, the basic lists will be of use if for no other reason than as a point of departure. Some teachers will note that little primary source material is listed, but there is no reason why they should not add that which they consider essential.

Unit III on "The Selection of Materials for Effective College Instruction" is again the thorough treatment of the subject expected from a librarian of Wilson's wide experience. Since this unit is chiefly a succinct summarization of the points discussed, a brief listing of the topics treated indicates the complete coverage of this important aspect of library administration. Primary considerations include the objectives of the college, the curriculum and methods of instruction, and the instructional staff and composition of the student body. Other topics include evaluation of library holdings, provision of materials not demanded by the curriculum, and suggestions for a program of acquisition. The final sections deal with the administration of the library's book funds (including sources of book funds, their control, and ordering and processing library materials) and sources of information about materials published currently.

[16] "Book Requirements of Survey Courses," *Library Quarterly*, XII (1942), 75–93.

Unit IV, which deals with "Reading Guidance: A Function of the Entire Faculty," summarizes the attempts of several colleges and universities to solve guidance problems in reading. Of particular service are the two bibliographies which give a selection of material dealing with a few of the many aspects of reading which have been investigated intensively in recent years and a few of the manuals which are used with or by students who want to be able to read and study more effectively.

This section on reading guidance bears a close relationship to the concluding unit of the volume, which deals largely with the problems of faculty-library co-operation toward more effective college teaching through improved library use. It is a summary of the uses which the instructional staff can make of the library, references to which have been made throughout this paper. Reference has already been made to several of the specific examples of library-faculty co-operation of many college and university libraries. There is a useful check list of these in Unit V.

The Library in College Instruction has brought together into one volume the thinking of the last two decades of educators, including faculty, members of the administration, and librarians, on the vital role the library plays in college instruction. It is a book which might well be used in teaching the graduate student preparing for a career in college instruction and in college librarianship how the library can be used for teaching purposes. Such courses should be taught by some combination of librarians and faculty members from the subject-matter fields. Finally, the book will serve to merge faculty members and librarians into a unit in attacking the problem of teaching more effectively. It is by the use of such aids that educators can "make the library, as much as any library possibly can, help the teachers to teach and the students to learn."

MAN, THE METHOD-MAKER

Robert F. Creegan

THE editors of this *Journal* recognize that "those responsible for general education should seek a conception of their work which takes direct and systematic account of our common humanity and which gives priority to the vocation of man over all special vocations." This is our point of departure. We have committed ourselves to a philosophical quest at the outset of our thinking about education. We have recognized that orderly procedure in educational policy-making, no less than actual progress in the daily labor of general education, presupposes some knowledge of "our common humanity" and of the "vocation of man."

Should these ideas turn out to be only glittering generalities, then we shall have been far too bold. We shall have set forth on a hopeless quest, if it should prove impossible to give substance, or pragmatic import, to these bold thoughts. To be sure, their full meaning and substance is a discovery which only the totality of human history could achieve, and the end, we hope, is not yet. We even hope that the world of man is still a young world. Meanwhile, the question is whether, here and now, the central concepts of general education are sufficiently concrete to make effective action possible. With this last question, and as one contribution toward the answer, the present paper is concerned. It is concerned, primarily and directly, with "our common humanity" and the "vocation of man," and only in a secondary and derivative way is it concerned with technical problems of educational procedure.

Aristotle is often invoked by those who feel the necessity of confronting the mystery of the human vocation. Let us, also, invoke the Aristotelian presence, but let us do everything to refute the possible accusation that we are, in any sense, servile in relation to tradition, however grand that tradition may be. We will go to Aristotle for clues. No tradition and no organization shall be our absolute authority. On the other hand, we shall not fall into the bad taste of sneering at what has been great and creative in man's past conversations about his own nature and destiny.

Aristotle did not go far wrong when he defined man by differentiating him from the lower orders and when he taught that the differentiating character of rationality was the pivotal concept for ethics and politics, for poetics and pedagogy. Aristotelian rationality, however, remains an equivocal concept. If many of our contemporaries reject it altogether, as the distinguishing character of man, the blame is partly their own, but partly Aristotle's.

Contemporary American psychologists or, at any rate, no few of them fairly revel in the thought that the ancients were naïve flatterers of man. Apes can learn to use slot machines, if not to understand television programs. And, as a matter of established psychological fact, no little of that behavior which Aristotle seemed to regard as subhuman, even when it pertained to man, and which he regarded as altogether instinctive was actually "learned behavior." Far be it from us to reject modern psychology, but we are going to reject, both totally and cheerfully, the pseudo-philosophy which sometimes is associated with modern psychology. We suspect that the Sophists of con-

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temporary psychology and social science are the worst enemies, although they are also the cleverest propagandists, of those sciences.

We are bid to admit, after all these generations of illusion, that beasts are rational and that man is bestial. Now there may be something to this wisdom of despair, parading as the last word in "science," but the differentiating definition is still the best, in the sense that it is the only possible definition. Without clear-cut distinctions, all words become equal and hence meaningless, which, after all, may be just what some self-styled lovers of democracy and of semantical clarity are hoping for. Did not even the ancients realize that dictatorship would be the inevitable sequel of a democracy of chaos and a semantics of popular nonsense? Genuine democracy requires clear-cut distinctions and firm policies. That is why some of us recognize, more and more clearly with every mile of our involuntary passage along a road which ends in chaos, that ancient logic made some definitive discoveries, even though Aristotle had not the evolutionary perspective of modern man. Without repudiating modern science, we must clear away modern confusion, a confusion which resides in the naïve belief that there ever could be, in a literal sense, a unity of logical opposites. No namable entity is ever both "X" and "not-X" in the same respect at the same time.

Aristotle had a point in his definition of man. As a matter of fact, he had two points. One of them was that man is different in reason. The other was that this very difference involves, potentially, some sort of human unity. How is man different? Let me state it this way: Things react, animals learn, and man learns about learning. All of man's doings and learnings are directed by what man has learned about methods of learning. Man is the methodological animal. Man learns to distinguish between appropriate and foolish methods in each of the types of activity. The quest to define the self and its matrix takes its point of departure from methodology. Concern for methods, concern for being human, and concern for total system are the root concepts of philosophical rationality.

What has all this to do with human unity? For one thing, the specialist becomes a Universal Man only in so far as he appreciates what all the specialties have in common, and appreciates the differences, too. There is a common method of being human, and there are also specialized methods of human activity. General education must concern itself with the relationships among these.

For another thing, the interest in methods makes possible a type of unity among men, a universal community of method-understanding individuals, which marks a distinctive level in nature. The adjustment of mere life to mere life may be partly predatory, and yet successful. The adjustment of man to man presupposes a respect for distinctive contributions which is incompatible with any toleration of predatory relationships.

All methods, in the last analysis, are methods of learning. Even on those occasions when the goal of action is not theory but rather is concrete doing, strictly according to habit or formula, the specific act must be adjusted to what is unique in the situation, and this implies some minimum of learning. Now if all methods be methods of learning, then the general categories in terms of which we understand learning, in the most general sense of the term, are the most basic categories of human existence. On the other hand, the categories by which we clarify specialized methods, whether scientific or executive or artistic, are secondary categories for philosophy. They are secondary in the sense that they presuppose the most general method of learning and are differentiations of that basic method.

Perhaps Dewey had some such insight as this, even though he did not state it in quite these terms. We will have to ob-

serve that it would be altogether soft-headed to define all methods, without exception, as being instruments which man uses. At least some methods are far too close to our mode of existence for that. In any epoch man is the methods he lives and the methods he uses. There is a hierarchy of methods. Some methods man could not abandon without ceasing to be human. Others could be abandoned only through crises which would transmute whole civilizations. Still other methods could be discarded without any great change in the values which are celebrated by any specific human community.

What are the basic categories of learning? This is the same as to ask for a statement of the basic categories of human existence. In the most general terms, perhaps the answer would be that the basic categories are: situation (including impulse to produce or undergo change), trial-and-error action, and interpretation.

Refusal to learn may involve refusal to engage in trial and error or refusal to relate results to the system of beliefs, or both. A system of beliefs is never totally at stake in a situation. The total system changes very slowly, that is, trans-situationally. Some central beliefs, like the principle of noncontradiction, perhaps never change, once they have been clearly mastered, since logical integrity is as necessary for intellectual growth as is empirical enrichment. Both differentiation and integration are involved in any type of progress. Random, or trial-and-error, production provides new forms of action which must be put to the functional test, which is a systematic test and which is understood only by logically connected beliefs. This random action, however, is only a free elaboration upon situationally appropriate forms.

This statement of the basic learning categories is, of course, exceedingly rich in implications concerning the nature of man. Man is limited and needs to make progress. Man can make progress through trial and error. Human progress is never linear or direct, since it does require trial and error. Learning about methods always involves the recognition and systematic appraisal of past errors, as well as of past successes. Unlearning and relearning are not incidental aspects of the learning process but are absolutely essential and central characteristics. Great courage is necessary in the quest to learn, and, for learners in whom this is lacking for any reason, discipline must play a part until the necessary resoluteness be achieved.

Man needs liberty, if he learns only by trial and error. Man equally needs solitude, if full exploitation of trial and error requires precise and comprehensive articulation of results to total system. The statement that man needs solitude does not imply any denial of the proposition that there are "families" of belief-systems. Total systems of belief are historical accretions. There is no logical contradiction between the propositions that the highest wisdom is accumulated and that it evolves through moments of solitary confrontation, no less than through moments of renewed conversation on ancient themes.

Man may renounce liberty. He may seek to escape the necessary conditions of learning. He may betray the promise which is inherent in his kind's historical encounters with the actual. He may make a comforting fetish of some object in nature or in society. He may submit to some absolute authority. Where freedom lives, it lives in opposition to some of the deepest-rooted and most universal traits of socialized human nature. Man needs correction, no less than inspiration, from history.

Free men must plan for freedom and, at times, must fight for it. The American system of constitutional checks and balances illustrates planning for political freedom in a world in which betrayal is altogether at home. We plan for freedom in the economic life through systems of taxation and selective public enterprise, through programs of conservation,

through credit controls and information services, and through many other devices which support, even while regulating, a trial-and-error, or market, economy. Planning for freedom in the educational field includes all our thinking about educational institutions and curriculums and all our administrative procedures. The studied discipline of the immature—something even more necessary in a free society than in any other type—expresses the resolve that they shall grow into intellectual and moral autonomy. The desire to accept the difficult conditions of learning, including unlearning and relearning, where past errors of method or content are concerned is an extremely fluctuating desire, even in superior adults. The potentiality for this desire is innate only in part. Civilization, as a historical process, carries this potentiality within itself, and it is awakened in immature individuals only through discipline. The native desire to learn, if only interest be aroused, does not extend to the level of learning about methods until it has been supplemented by a "negative" motivation, emerging from a critical self-analysis which does not appear spontaneously in the immature. There is a veritable wrestle between inner spontaneity and the man-making process.

Planning for freedom includes planning for its defense against groups who have adopted betrayal as their conscious rationale. It also includes the inner battle against the seemingly easy way as that voices itself in each one of us. The defense of freedom, without and within, is impossible without systematic battle-plans.

These concepts will serve to sketch some central features of "our common humanity" and to suggest a few ideas about the "vocation of man." Let us glance at a bare minimum of the more strictly educational implications.

If man be methodological, then man-making must be a making-conscious of methods, and this I regard as the chief task of general higher education. In infancy there is a lot of doing which is not really learning. On the lower educational levels there is a lot of learning which is not really a learning about learning, that is, which is not methodologically sophisticated. Let us not evade the implications. Man is betrayed by any so-called "higher" educational policies which avoid the methodological awakening or the becoming aware of culture as methods, and of man as method-maker. The highest principles, so-called, are so many "bromides," without provision for this becoming conscious of methods.

General higher education must transmit, through giving contemporary social and personal meaning to, those very central concepts of human existence, the basic categories of all learning and progress, which we have exhibited. We seek no quarrel concerning words or phrases. Meanings are at stake here. There is no doubt that, however phrased, central concepts like "trial and error" and "interpretation," like "liberty" and "solitude," like the "betrayal" and "defense" of such values, and like "planning" and "discipline for the sake of freedom," must be understood, and understood widely, in educational circles if democracy is to survive. They must be understood by college and university students. A preliminary understanding of these very concepts must be one objective of the lowest level of general education. A much fuller understanding of their implications must be one objective of all higher education. From foundation to pinnacle, democratic education must include concern for the understanding of the philosophy of democracy as the only intellectually adequate philosophy of human existence.

General education must transmit the formal knowledge of, and evoke the personal and social values in, the chief specialized methods of human learning. These would include the logical and scientific methods, both pure and applied; and some attention should be given to

the historic crises in the development of these methods. These would include executive methods, both administrative and supervisory; and attention should be given to the ways in which different types of executive decisions have been, or should be, reached. Political methods would be included and be related to their historical and cultural contexts. Poetic methods would be included, with attention to all the types of evocative symbolization. Philosophy would be included, with its general theory of method in relation to man and the matrix.

The methods of teaching the understanding of methods are many. The expository and literary method is still of prime value. To this must be added the experimental and engineering methods, which give concrete meaning to certain concepts in art, no less than in science. A lost dimension of higher education is the decisional method. Higher education should include practice in reaching collective decisions, through open discussion of described cases of social tension which require solution before some common need may be fulfilled. Personal decisions should be made an issue through the requiring of organized statements of personal belief in the various areas of learning. So-called "objective" tests have little to do with the art of individual decision-making on a systematic scale, and this must be tested in other ways. Both the executive and the poetic arts, those of decision-making in concrete situations and those of the expression of situational values, have been neglected in many general education programs. Education which neglects methods of concrete decision and expression is socially irresponsible to the *n*th degree.

All the methods are ways of adjusting, but the criteria by which the "well-adjusted individual" shall be defined are notoriously vague in many of the treatises on education. The empty sophistry of some contemporary psychologists has been borrowed by some contemporary educators, who do not realize that it is possible to be blissfully "adjusted" to a situation in which catastrophe impends, without being at all prepared to forestall it. The real world is not the carefully sterilized school environment of many self-styled "progressive" educators.

All the methods of man are methods of work. It is naïve to separate the concept of personality and the concept of work. Man is what he makes, or how he makes it. Man is, more essentially, what he makes of himself and how he quests to build a self. Man is, most essentially, a way of doing; but this must be defined with reference to what is done, and it does not exist apart from what is done.

The vocation of man is to subordinate all the modes of working to the work of person-building. Man, the functionary, is a contribution to man, the person, that is, specialized functions must be judged as contributions to the work of sustaining the self-creative responses of all persons.

General higher education allows the student to confront these very issues. To understand man is to interpret the relationships between the chief methods of human enterprise. The student discovers for himself how executive decisions take account of and, in a sense, use natural laws, but do not change them. The student discovers that political actions which tend to conserve, or to modify, institutional forms are also conditions of that executive activity which is required to accept a framework of institutions. Both the political and the administrative functions, the student will recognize, are to be evaluated, if at all, in terms of their contribution to the quests of persons freely to confront the actual in all its dimensions, and to express interpretations and decisions with no less freedom.

The student will learn that the language of strict classification grows from that of poetic similitude. He will learn that the language of strict correlation grows from that of lived involvement. The student will learn that political and

executive acts use logic and science, but are responsible to the values of a lived community of questioning and answering.

Perchance, the student's philosophic questioning of methods and of the relationship between methods will culminate in a really systematic and cosmological philosophy. At any rate, some courses in higher general education must be concerned with this very possibility. We shall conclude the present paper with some guide-lines toward the systematic philosophy which might emerge, once civilization was awakened by a widely shared sense of methods.

There is a ceaseless variation and a survival of the fittest on the level of inanimate reactions. Formally speaking, there is a process of differentiation and integration, but ascending order is everywhere mocked by descending order. The universal status quo is a balancing of constructive and destructive forces, celebrated only by those "terrible meek" who make no fetish of their own mode of existence but who delight to witness variations on every theme and are glad that any one form of order has at most an intermittent lease upon existence.

Besides ceaseless variation and survival of the fittest, there is, then, a surplus of order, a sense of possibility, on the organic level. Expression goes beyond adjustment, and, in man, this surplus of order becomes conscious expression of the very thrust and involvement of things.

In his attempt to express the face of the actual, man discovers that the actual is also the ground of all dimensions of realistic definition and the field of all the types of reliable correlation. And the discovering is the living. Our history gives particular channel to the universal thrust and particular focus to the mutual involvement of the many energies.

Every level of human life is a level of celebration, some life-type being asserted as the utmost plenitude of life. The person respects what is like himself only because he celebrates what seems to be most alive or, in other words, to embody the fullest order. And yet the human person is prone to betray this ideal of plenitude, because of very fear of what is needed to perfect the form of life he celebrates. Hence general education has ever a paradoxical role: to conquer the pride of self-assertion, while releasing the energy of self-building, and to put every doctrine to the test of the total dynamism of the actual in us. Man is a function of all that he does confront or that he could confront through any method of questing. Work is instrumental to access, or practicality to contemplation; but contemplative access alone completes the work of person-building.

And what of teaching in general higher education? Is this not the place where teaching as exposition becomes teaching as celebration, and teaching as guidance celebrates its liberating purpose? To answer to, and to live, generous order is the life of a teacher.

The most general method of progress is multiple variation upon the themes of order, each variant being put to the test of systemic stresses. The most general form of progress involves differentiation with integration, but this is matched by the opposite form of regress. How, then, is the order generous? It is so by the very fact that, when man teaches order, he translates all these variations to the terms of dimensions of possibility, and answers to the exigence of this very possibility.

The basic method of human existence, in other words, is not instrumental to, or made by, man but rather is a becoming deliberate of the exigence of ideal plenitude in the process of man-making. In this process the teacher celebrates the exigence of the very methods he exhibits. He proves their continuity with the universal thrust toward diverse embodiments of this ideal possibility. He demonstrates that this, and this alone, calls for all the making and for all the unmaking, and is answered here and now or wherever and whenever life be celebrated beyond all

fear-born calculation. All liberal and liberating teaching is this teaching, or prepares for this teaching, for only when exposition becomes celebration is it an exposition of our very life, as this continues evolution and confronts the vast matrix of this process of embodiment and of all embodiment.

The work and the word of the teacher in general higher education are simply the work of becoming human in the most universal sense, and of exhibiting the types of learning, of unlearning, and of relearning which are inevitably involved in this, the vocation of man, which is unique in the tragedies and the comedies that each man lives, being universal only in so far as the thrust and involvement we all celebrate are universal.

Man the method-maker understands the unity of his methods only when he learns to celebrate the more exigent making with which they are continuous and to recognize that method-making is a function of man-making, which is complete only when man answers to the exigence calling him away from unreflective bestiality and unto autonomous existence.

The concluding part of this article has crossed the boundary from analytic, or methodological, philosophy to synoptic, or metaphysical, philosophy. And that crossing was quite necessary, since the concept of learning has metaphysical implications which are unavoidable, once the specifically human dimension of learning be understood. Things react, animals learn, and man learns about learning; and what man learns about learning transforms all his doing and learning. Man learns that the quest to orient himself to that which transcends present experience, but which articulates that experience and sustains the questing, is a quest to redefine human nature and to unlearn the pride of idolatry, even while learning the praise and celebration of freedom. Man learns that man-making is completed in the vision of generous order whose exigence leaves open for awakened existence the clean alternative of "liberty or death." Man learns that the rise and decline of forms of order—whether lives, or species of lives, or civilizations, or cosmic epochs—are like the breathing of a system whose every focal unity is utterance. Man learns that the plenitude of developmental conditions is completed only in the simplicity of liberated judgment, freedom answering to freedom and for all things that they are good.

THE METHODS AND CONCEPTS OF HISTORY

Allen A. Gilmore

HISTORIANS, like any other group, have their fundamental assumptions, some explicit and some implicit. The process of becoming a historian is the process of acquiring these assumptions. And the process of teaching history is, or should be, the process of imparting the basic values of historians, their attitudes and accepted ways of doing things. Those of us who teach history in technical institutions have certain advantages as well as certain disadvantages in carrying on this process. The liabilities are evident (the amount of time the student has at his disposal for such studies as history and the orientation of his interests and aptitudes) and need not be stressed. The credit side of the ledger is perhaps less apparent; it is with this and its implications for the profession that this paper deals.

The advantage which historians in professional schools possess is a consequence of the constant pressure upon them to search out, formulate, and expound the basic assumptions of their craft. The fact is that engineering and science students simply will not stand for the kind of history that is offered complacently without justification or explanation. No student who hopes himself to become a professional historian and very few liberal arts students, whatever their hopes, will demand an apologia from a history teacher or force him to think out at every turn the uses and purpose of what he offers. Rather, in such cases, whatever is offered is accepted as a part of the natural order of things. A history course in a liberal arts program can be conducted under the assumption that the good students may themselves become historians. It is easy under these circumstances for the teacher to lose track of the fact that what sits before him is not a professional audience. In a technical institution, on the other hand, this is only too apparent; whatever else happens, it is highly unlikely that engineering and science students will grow up to be historians. In an embarrassing and sometimes annoying way, they demand to know the reason why. Hence it is necessary, in these circumstances, to think of the uses of history in terms that are meaningful outside the conventions accepted by historians.

The pressure of time is no less severe. In technical schools the history courses that a student takes will be both few in number and relatively short in duration. Furthermore, whatever he learns outside of or after these few courses, he will have to learn under his own steam, without formal guidance. Therefore, the choice as to what goes on in these courses (and what does not) is one of which their teachers are acutely conscious. It is a question of economy and budgeting. Time expended for one desirable purpose is no longer available for other purposes. The fact that the means are scarce makes it important that the ends desired be carefully chosen and arranged in a scale of preference. These decisions must not be allowed to go by default.

In deciding what a historian has to offer that will be of use to engineers and scientists, it is helpful to make a distinction between what he knows about his subject matter, on the one hand, and the various skills and techniques that he possesses for dealing with this subject matter, on the other. Having made the dis-

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tinction, the implication is clear: a historian is not someone who accepts a particular set of propositions about the past; rather he is someone who acts like a historian, who applies in a particular area of human experience certain methods and techniques. History, in short, is not a body of knowledge but a way of behaving. And a history course taught with this definition in mind will aim at developing in the student the ability to behave the way good historians do whenever they are presented with a historical stimulus.

If these views are accepted, decisions about what should be included as content material in a history course are somewhat simplified. It is recognized that these decisions must be arbitrary: there is no necessary content. The great principle is that there is nothing that cannot be left out. And it is also clear that any attempt to "cover" any particular subject matter is doomed to failure. Content will be included not for its own sake but because it lends itself to other purposes. It is certainly desirable that educated men have a sense of the long-term time flow and connectedness of the past and be able to form a coherent picture of the growth and change of their culture. It is also desirable that they acquire, as far as possible, the breadth of cultivated awareness that is a product of a knowledge of the past. Beyond this the specific content of a history course must be chosen from an inexhaustible reservoir. What is actually selected should be decided upon because it is peculiarly appropriate to teaching what a historian does, rather than merely exhibiting what a historian knows.

The real problem in designing a course that aims to teach students to behave like historians is to decide precisely how, in fact, historians behave and to organize one's conclusions in a useful and teachable sequence. Solving this problem is the more difficult because it is exactly here, as one would expect, that the structure of basic, unspoken assumption plays the largest part. It is also necessary, but difficult, to put one's description of how a historian acts into nonprofessional language. Historians, like other specialists, write and talk so much for one another and so little for anyone else that communication with nonhistorians is an all-but-lost technique and basic assumptions are seldom expressed and even less frequently examined.

Traditionally, historical method is largely conceived as the expert handling of evidence. If you ask a historian what he does well, it is likely that his answer can be analyzed into a number of skills relating to the selection, evaluation, and presentation of evidence. And he does these things very well indeed. A number of fine books have been written describing this part of a historian's behavior, and it is clearly an important part. Beyond this claim to an ability to handle evidence, the typical historian is strangely humble and self-effacing. His lack of self-confidence is revealed in his suspicion of theory and the construction of theory. He does not seem to feel that he is particularly good at perceiving general patterns in human conduct—certainly not at discovering laws. Wherever he can, he tends to avoid drawing conclusions at all, and, when he must generalize, he hedges with innumerable qualifications. On the whole, he seems happiest when he is the most hesitant, which is revealed by his frequent use of the double negative. Although he knows better, he will tell you he merely describes what he sees; to explain is not his business.

In all this I believe he does himself an injustice. There is more to historical method than the ability to handle evidence. There are other things that historians are trained to do and that they do well. These further methods and abilities, however, lie so within the limits of habitual practice as scarcely to be conscious. Only an effort to describe them for nonhistorians—an effort, for example, to get engineers and scientists to do what

historians do—will bring them to the surface.

In addition to being able to choose and weigh evidence, a historian is trained to make wisely the decision of what evidence he will choose and weigh. Certainly, a crucially important part of his activity is making up his mind as to what are the right questions to ask—what, in fact, the problem is that he is attempting to solve. Although he has had no courses in graduate school designed to develop in him this ability, he has nonetheless unconsciously absorbed and, by habitual practice, has made his own a set of standards in terms of which the decision is made. These are standards of relevance, of significance, and of purpose. In part they are personal and subjective, but not wholly so. They are not whimsical or even indefensible. On the contrary, they are pretty good standards and should be proudly expounded and set forth instead of being relegated, shamefacedly, to the background. It is these hidden criteria that make it possible to distinguish a historian from an antiquarian or a political commentator, a distinction that the world at large is apparently finding more and more difficult to make. An important part of teaching history should be a deliberate and conscious training in this ability to ask the right questions.

Another important skill that historians have developed, even more submerged than the last below the level of consciousness, is the ability to stop making an investigation at the right point. To decide when an investigation is complete, when the process of asking questions has been carried far enough, when the time has come to make a judgment, is a very subtle and difficult thing. Yet historians, all-unknowing, have been trained to do this; and, while there are obvious examples of those who have not decided and do not know when to stop, on the whole they do it very well. The making of this decision, of course, is concealed by a traditional devotion to an ideal of perfection, completeness, and definitiveness. In fact, of course, we all recognize among ourselves that we stop somewhere short of this ideal; but we do not make it apparent to the rest of the world just how far short we stop, or for what good and sufficient reasons. Surely, teaching history should involve an effort to develop in students the ability to make this decision wisely and well.

The elements that determine the making of these two decisions—of what questions to ask and of when to stop asking questions—are best understood in relation to the basic conceptual structure that historians have developed and habitually employ in organizing and analyzing the material with which they work. Concepts, meaning practiced ways of ordering the raw material of experience, are necessary mental tools. No thinking mind can absorb the raw product of perception directly. Rather, what is seen is fitted together or arranged in convenient abstractions. One man, one profession, or one culture is distinguished from others by what might be called its "conceptual habit of mind." Thus physicists, who conceptualize nature in somewhat naïve but pre-eminently useful ways, think in terms of time and space, force, mass, and velocity. Their success in teaching the subject of physics is surely one of the most remarkable achievements of our age. They have been, in fact, so successful that people in general have come to believe that this is what the world is like. This success is related to the clarity, simplicity, and usefulness of their basic concepts. It is important, then, in considering how historians behave, to inquire into their conceptual habits.

Here again we meet the difficulty that historians are not articulate. Most of what can be said about it relates to the level of implicit assumption, and historians talking professionally among themselves accept without conscious awareness a conceptual pattern that, because it is common, needs no defense or explana-

tion. Those who work in technical institutions, however, must talk with professions that are habituated to quite different conceptual patterns and hence are compelled to examine their own.

As a matter of fact, if you ask a historian how he conceptualizes the occurrences of the past, he will probably tell you that he does not. He will say that he deals with concrete actuality, with real, living, individual people and events, and that he mistrusts abstractions. In saying this, he expresses an ideal, which, like the ideal of perfection, is, however praiseworthy, unattainable and not of this world. It is an appealing illusion—but an illusion, nonetheless. Trends, periods, classes—these things exist in some sense; and it is no use pretending that they do not.

This is not the place to attempt an analysis of historical concepts that would be adequate from the point of view of the subtle needs of professional historians. The purpose of this paper is to do no more than insist that such concepts exist and indicate by one or two examples how they may be brought to the surface as devices for demonstrating to nonhistorical audiences the essential character and meaning of history.

Historians are accustomed to conceptualize groups of individuals or events, periods, and culture as totalities. As for a Gestalt psychologist, the whole is something more than, and different from, the sum of its parts. The whole or totality has a life and character of its own, which, however, for purposes of analysis may artificially be divided into parts. The middle class, the French Revolution, the Italian Renaissance, are examples of such totalities. They are entities, and they can be described and presented almost like characters in a play. They come into existence as a product of research, and further research often makes it necessary to modify a character or interpret it in a different way. Occasionally, as a consequence of investigation, a character may be completely deleted from the script.

This habit of thinking of things as wholes is highly characteristic of historians. Not only do they identify entities as totalities; they are also trained to examine these entities from all sides. They think in the round of the full circle of human affairs rather than focusing on this aspect or that. When they do focus on the economic, the political, the aesthetic, or some other phase of human activity, they do so with a full awareness that they are dealing with a part of a whole. It is in this respect that the concept of totality is useful as an analytical tool. One important mental operation that every historian performs when he seeks to ask the right questions is to send his mind through each sector of the total circle, to be sure that he has omitted nothing of importance and that he has given a proper balance to each part. This is an operation, once defined, that can be taught.

A second concept which historians employ might be called the "concept of motivated behavior." A historical investigator assumes that the events passing under his eyes are meaningful, however erratic or whimsical they may appear. All human action is conceived by historians as directed to some end or purpose. The purpose may not be apparent to those who carry out the action, and it may be very hard to identify, but it is there. Furthermore, just as action implies purpose, so purpose, in turn, implies a set of values or standards in terms of which that particular purpose was selected as a desirable goal. Thus, whether you look at an example of conspicuous waste or a feudal oath, the erection of a Roman amphitheater or the destruction of a Gothic temple, there is a purpose and a value to be identified and described. It will be agreed, I think, that such identification and description are among the more meaningful of the activities in which historians engage.

To carry out this operation in any particular case, to perceive, for instance, the values that lie behind the taking of a

feudal oath, is a matter for experts. And this is what historians are, and doing it is one of the many things that they do well. But in doing it they should not lose sight of the fact that the concept itself needs to be taught. Too many students today see human behavior as something flat and two-dimensional, like the world of a comic strip. For them, situations are simply there, good or evil, incapable of analysis in depth. Surely again, here is something that can be taught.

The concept of totality and the concept of motivated behavior are basic parts of the conceptual framework of historians. If the aim of this paper were to describe this framework, much more would have to be said. Historians certainly have a concept of time, different from that of physicists, in terms of which they talk of periods or ages. Clearly, they conceive change through the medium of a concept of mutually interdependent variables rather than as a cause producing an effect. Historians also have a concept of a class or group of objects which is created when certain elements are identified and found to be common to, or typical of, the whole class or group. Many other concepts exist, more or less fundamental to and characteristic of the ways that historians think. Further analysis of this conceptual structure might be both enlightening and useful. At the moment, however, only two points are to be made: first, that there are such things as concepts (of which the concepts of totality and motivated behavior are examples) and, second, that the teaching of history will be more meaningful and useful if such concepts are deliberately stated and taught.

If history is conceived primarily as a body of information to be learned, then one kind of teaching is appropriate. In this case, that teaching will get the best results which puts a premium, first, on memorization and, second, on the ability to talk with academic facility about the past. If, on the other hand, history is conceived as a way of behaving, there is no way to learn it but to do it. It is an accepted pedagogical truth of our day that a student learns by doing. No performance, however brilliant, that takes place in front of him will have meaning as part of a learning process except in so far as it takes account of what he is doing. If he passively watches someone else ask questions, weigh evidence, and find answers, what he will learn is how to watch this progress, not how to do it. If in examinations and otherwise he is stimulated to write about these matters, that is what he will learn to do with more or less glibness, assurance, and success. But he will not learn himself how to do these things except by doing them. It should, of course, be added that if listening to lectures involves an active response—rethinking or restructuring materials, filling in gaps, and so on—learning can follow accordingly. Perhaps the most difficult judgment a history teacher has to make is to distinguish between an academic, verbal facility to talk about historical problems and the analytical power to solve them.

In order to illustrate the points I have made about the methods and concepts of history, I would like to draw upon some examples from a freshman history course that has developed (and is continuing to develop) with these ideas in mind. This course, which is required for all freshmen at the Carnegie Institute of Technology, meets in small sections three times a week through two semesters. It is the introductory unit in a four-year program in the humanistic and social disciplines.

The purpose of the course is to train students to behave or, rather, to start them on the path of behaving, in the way historians do. Our goal is the ability to think intelligently and to form judgments wisely in those areas of human experience that are called "historical." An important element of any human experience is historical, and those who teach the course are conscious of this and of its implications as to the community of pur-

pose and the community of methods of good thinking among all disciplines—scientific and technological as well as humanistic and social. In this sense the uses of history are applicable in all areas of human and social action.

The content of the first-year course is agreed upon by the staff. Our inclinations have led us to minimize textbook reading and to depend in the main on a variety of reading available in multiple copies in the library. We place emphasis on the wide range of types of material to be used. Some of it is primary material. Some is conventional history, some interpretive or more specialized. There is material usually considered literary, and there are collections of reproductions of art. In the part of the course concerned with more recent times, use is made of newspapers, pamphlets, and government publications. The hope is that from all this the student will be able to put together, not *the* story, but *an* ordered, coherent story, of the development of Western civilization since ancient times and, further, that in the process he will acquire in some degree the kind of awareness in this subject area that characterizes an educated man. Any means that will lead students successfully toward these limited content goals are permissible. Lectures, "cram" books, outlines, and memorization are all employed for the sake of getting this business done well and over with, leaving free a major part of student and class time for the pursuit of the main objectives.

The heart of the course is a sequence of exercises designed to give the student practice in acting in the way historians act. It is necessary to decide what operation is desired and to arrange the exercise so that the students do, in fact, perform it under the critical guidance of their teachers. We discovered very early that everything cannot be taught at once. At first, the exercises must be artificially simplified to focus upon some one particular activity. They must be arranged in an orderly, teachable sequence, going from the simple to the more complex, adding, with much repetition, new operations to the ones already in use. In the end, the student should be conditioned, as the psychologists say, to react in a patterned way when presented with a historical stimulus. In so far as success is being achieved, both stimulus and reaction will approach the complexity of real situations.

Three examples chosen from different points in the course will illustrate the nature of these exercises. The intention, however, is not so much to describe the course as to present some case histories of the general ideas expressed in this paper about the methods and concepts of history. The exercises can be taken as simplified models set up to illustrate the ways in which a historian works and the conceptual structure of his thought. That they also illustrate what a student does (and hence learns) in this particular course is incidental.

The reading assignments in the opening weeks of the course are first in Ruth Benedict's *Patterns of Culture* (to teach the cultural approach to history and the concept of culture as a totality), then in Tacitus' *On the Germans* (an exercise in the handling of evidence, applying Benedict's ideas to a particular culture), and then some material on the origins and development of Christianity. This last material is made up of three parts: chapters from Strayer's medieval textbook,[1] the fifteenth chapter of Gibbon, and the Acts of the Apostles. An exercise is defined for each part of this reading.

In connection with the reading of the Acts of the Apostles, each student is required to find his own text. Somewhere, somehow, he is expected to unearth a copy of the New Testament. The exercise is one that requires the student to find and interpret in this document evidence

[1] Joseph R. Strayer, *The Middle Ages, 395–1500* (New York: D. Appleton–Century Co., 1942).

about the organization of the church. Because it comes so early in the course and because experience has shown that our students find this reading difficult, the exercise is deliberately simplified, and very precise instructions are given. Each student is asked to make a list of the offices or functions mentioned in the document of men who exercise authority or influence in the Christian community. The lists having been submitted, they are then interpreted in class discussion. A composite, more or less complete, list is written on the board. It will run something like this: apostles, presbyters, bishops, exorcists, priests, supervisors, elders, deacons, healers, prophets. An effort to simplify the list makes it evident to students (usually for the first time) that they have been using different translations. Different terms stand for the same office. They come thereby to learn, without any knowledge of languages or manuscripts, an important element in the methods of textual criticism.

The next and most important question is, Who in this simplified list has the superior authority? A partial answer is easy: an elder, for instance, is clearly inferior to a supervisor. After this, perception tends to slow down and usually needs to be stimulated. The students may be asked to look for any element that will be common to any part of the list. Perhaps a student will notice that some offices can always be located geographically, while others cannot, but move from place to place. Another student may notice that one group received its authority from others, while another group received its authority directly from God. In fact, the two distinctions coincide: those who can be located geographically are also attached to a human organization. There is, therefore, both a hierarchy of spirit and a hierarchy of office. Further thought and reflection on what they know of human experience will lead the students to see the impracticability of a hierarchy dependent solely on things spiritual and to perceive the future course of development in which spirit becomes inherent in office.

In performing this exercise, the student has learned to focus his reading on the answer to a specifically stated question; at least, there is a lesson to be learned here on the dangers of "absolute" reading, without definition of purpose. He has also learned that in interpreting evidence it is useful to look for common elements and to arrange the material in groups according to observed community. More important, he has learned that there is such a thing as evidence about human affairs, even in places where he has probably not suspected it, and that he is himself capable both of finding it and of using it. It is true that he has learned these things very imperfectly. What he has done in this exercise will have to be repeated in other contexts before he will acquire the habit of acting in this way. But a good beginning has been made if he sees that there is an intelligent way to act and if he realizes that he is himself competent so to act.

A second example is chosen from the seventh week of the course, which is concerned with the period of the Italian Renaissance. What the student knows as subject matter about this topic he learns from two informal lectures delivered by his instructor; the exercise that he does is to make a generalization about the Renaissance.

The student is first asked to read selections from the *Autobiography* of Benvenuto Cellini and from Machiavelli's *Prince*. At the same time he is sent to examine a small gallery exhibit of reproductions of Renaissance paintings, put together for this purpose. He is then required to select one item from Cellini, one from Machiavelli, and one from each of two paintings, such that the four together have something in common. His common denominator may be an act of violence, an interest in things classical, or anything he can find that is common

to four cases. He may, for example, find four instances in which an act of religious significance is performed. Cellini falls on his knees to pray. Machiavelli appeals to God on behalf of Italy. The main subject of one painting is the Crucifixion and of another the Adoration.

The last part of the assignment is that the student make a statement relating his four items to the period of the Italian Renaissance as a whole. Was it, for example, a period in which a great religious revival took place? Perhaps, on the contrary, these are exceptional cases and, properly interpreted, will show a declining, rather than an increasing, interest in religion. The student must try to ask and decide these questions by himself. He is to write down his four items, together with his generalization, and submit the paper for grading and criticism.

These papers are discussed at length in the next class meeting. At this point in the course the student has already learned the difference between fact (his four cases) and inference (the interpretation of their significance). As to the former, he has precise and demonstrable certainty: the cases are either exactly as he says or not; he is either right or wrong; there is no middle ground. As to the latter, the students work out for themselves in discussion some of the factors which govern the soundness of a generalization. They learn that an individual instance must be interpreted in its total context: Machiavelli's appeal to God must be understood in the framework of his generally irreligious or unreligious attitude. Similarly, the student discovers that in generalizing from his instances he is, in fact, deciding and asserting that they are typical of something. The validity of his decision, in turn, will depend in part on checking his cases against other cases. In part it will depend on his own training and insight, or perhaps on his own preconceived notion of what the Renaissance was like. He may have believed there was a religious revival, and that was why he sought and found these particular instances.

Here again, what the student does and therefore what he learns may be described as a technique of analysis. The exercise is an operation to be performed. It can be done with more or less skill, more or less purpose, and more or less insight. The point is that it is a process that is capable of being learned. It is at least as important to learn the process as it is to learn the conclusion which someone else has reached by employing the process.

The third example selected here to illustrate the methods and concepts of history is an exercise performed by students in connection with a three-week unit on the "Commercial Revolution." There are, of course, other exercises in this unit: using statistics, organizing information, and, especially, relating what is known in one sector or phase of experience (the economic) to other sectors (religious, political, and intellectual). The exercise in question is an analysis designed to lead to an identification of basic values characteristic of the rising Protestant, capitalist class.

The material for this analysis is selected from Defoe's *Robinson Crusoe*, a book with which most students are familiar. In the course of their reading they are asked to make a list of words that indicate Defoe's approval of Crusoe's character or actions. A typical list will reveal that the man was admired because he was industrious, self-confident, versatile, resourceful, pious, and thrifty. The student is then required to compile a second list describing the same elements of character or actions but from a point of view that is not Protestant and capitalist. He is asked to identify this other point of view, which may turn out to be that of a medieval aristocrat, for instance, or a Russian Communist or a Catholic reformer. From one or another of these points of view Crusoe may turn out to be materialistic, proud, scatterbrained, stin-

gy, gullible, undirected, or the unthinking tool of a selfish ideology.

Here what the student learns is not that one value is better than others but that all human and social action is meaningful in terms of values. He learns, moreover, a technique for the identification of these values, and that it is useful to employ this technique.

In general, the course from which these illustrations are taken aims at putting the student in a position to do the kinds of things that historians do and to think the way they think. An attempt, however imperfect, must therefore be made to analyze what historians do and think into its component parts. It cannot all be taught at once, but only step by step. The exercises must be sufficiently simple and clear to lie within the range of the student's abilities at the time they are assigned. Otherwise, he will develop neither confidence in his own analytical power nor a desire to use it. But they should also be repeated frequently, so that the habit of use will be acquired; and they should become always more complex, extending the student's abilities, so that in the end they approach as nearly as possible the actuality of real situations and the actuality of a trained historian's response.

At the same time that the student is performing these operations, he should form, and, indeed, inevitably will be forming, a conceptual structure. The illustrations given above are designed partly to show the gain in effectiveness of teaching when the concepts involved are made explicit. They are also aimed to show something of the role that concepts play in the thinking of historians. Thus, in the *Robinson Crusoe* exercise, the student learns not only how to identify Crusoe's values; he also learns to think in terms of the concept of motivated behavior. Here, again, it is necessary to decide what can be taught. The concepts selected are not going to seem adequate from the professional viewpoint. They must be few and they must be simple. It is, of course, important that they be those concepts most fundamental to and characteristic of the way historians think. In so far as success is achieved, the student comes, during the course, to acquire in greater and greater degree the thinking habits characteristic of historians.

The three examples chosen will illustrate how we who teach in professional schools have felt compelled to investigate the methods and concepts of history. Our activities have, we believe, implications for the history profession at large. We do not mean to say that we think we have a set of answers to the problems of what history is and how it should be taught. On the contrary, we have, in this respect, much uncertainty, which is reflected in many long and sometimes acrid debates. We argue about what operations shall be taught and in what sequence. We disagree as to how to limit content. It is difficult to devise new and meaningful exercises. We do, however, have a sense of conviction that may be summed up in these two propositions:

Fundamentally, history is a dynamic thing, a way of behaving, that is best understood in terms of a disciplined set of methods and a pattern of concepts. Learning to use these methods and to think in terms of these concepts is the essential element in the process of learning history.

AMERICAN HISTORY IN GENERAL EDUCATION

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THE teaching of social science courses in general education on the college level has become more widespread in recent years. Many of these courses deal with contemporary civilization and current problems which involve the selective teaching of American history; others give broader coverage in dealing with American civilization, ideas, and institutions. General education in the social science field undertakes to give our young people a common stock of fundamental ideas in the social, economic, political, and intellectual aspects of the society in which they live and participate. One of the chief objectives of such a program is to prepare the individual more effectively for the responsibilities of citizenship in a dynamic democratic society. This is by no means an easy task, for we live in a constantly changing world; the content of subject matter has been greatly enlarged; institutions have become increasingly complex; and human relations are highly interdependent. The situation represents both a challenge and a responsibility for teachers of the social sciences. There is common agreement that the challenge should be met but considerable disagreement as to how the responsibility can be best resolved. This ferment has helped to evolve the general education courses in social science, which attempts a different approach in preparing students for better social living.

The trend toward general education courses in social science has affected the teaching of American history. The impacts of two world wars, a great depression, and the atomic age have changed or altered many of the postulates that seemed to give special meaning to our history. Before these events overshadowed the world, one of the main characteristics of American thinking was its pervasive optimism. We were a nation rich in resources, had a rapidly growing population, and possessed an active faith in democracy. There was unbounded confidence in the future and but little doubt that the aims and aspirations of our democratic society were being fulfilled. There was a general feeling of contentment based on substantial achievements and hopes of better things to come. A general buoyancy and marked enthusiasm for the "American way of life" brought a lighthearted cheerfulness to the temperament of most Americans.

The period of prevailing optimism was short lived. The teaching of American history was not realistic enough to point out the threats to democracy at home and the dangers of imperialistic tendencies abroad. We face the future with many anxieties. The youthful confidence has given way to calmer deliberations. These changes have brought new tests to American institutions and forced readjustments in American life. Mounting tensions have caused many hopes to give way to fears. Undue pessimism has clouded our thinking and brought many doubts to mind which perhaps are not so serious as they may appear on the surface. Some people have even joined the cult of despair that the future holds no hope. Surely, a better balance can be struck between these extremes of optimism and pessimism so as to have a more rational approach to meet the challenges of our time.

A second generalization widely shared

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by Americans was belief in the inevitability of progress. The advancement of natural science and technological improvements hastened the processes of industrialization and provided better transportation facilities. The machine age speeded up the mass production of goods to satisfy increasing human wants. The United States was depicted as a land of fertile farms, abundant natural resources, improved methods of industrial production, and expanding markets. Industrialists, financiers, and business leaders were building a new America. It was not difficult to convince the American people that progress was associated with materialistic achievements.

The depression of the thirties jarred Americans out of their new-found complacency that progress could be taken for granted. Thus, at the very time we had made such great progress in controlling the physical forces of nature, we also reached an impasse in the social relations of mankind. The passing of time has revealed the accumulation of unsolved problems and perplexities at a far faster rate than we have made the necessary adjustments and reforms to deal with them effectively. Although a reappraisal of the situation shows that implicit faith in the inevitability of progress was misplaced, we still retain a firm belief in the possibility of progress. This belief places an increased responsibility on the role that education must play in the process to retemper the individual with the realization that human progress requires co-operation in planned, conscious efforts. Such a concept could show vast potentialities for the idea of progress and impart to it a new vitality, for, after all, the chief hope of mankind is that these perplexing problems can be solved by rational means.

A third assumption in our history inferred that freedom was secure in the United States. Following the Civil War, freedom seemed to be guaranteed. Little thought was given to the possibility that we might have to fight for our survival. This idea was confirmed by the measure of detachment we enjoyed from the rest of the world. Flanked by two great oceans, having no near strong neighbors, and with an untamed continent to absorb our energies, the cornerstone of our foreign policy could be based on aloofness from "foreign entanglements." We were content to till our own garden and let the rest of the world solve its own problems. High protective tariff barriers fostered economic nationalism which reinforced isolationist tendencies. The voters apparently found solace in President Harding's inaugural statement that the United States sought "no part in directing the destinies of the world."

In the present world crisis all doubts about freedom being in jeopardy have been removed. For better or for worse we live in an international community, and the indications are that conditions will get worse unless we strive to make them better. This realization has caused the United States not only to take a greater interest in international relations but also to initiate policies in an attempt to shape the course of world events. Our present prominent role in international affairs is still somewhat unfamiliar to us and is not of our own choosing. To prepare ourselves for this tremendous task of world leadership involves new educational procedures to help our citizenry adjust to and meet these new responsibilities.

Against these background developments there are many opportunities for social science courses in general education to further knowledge and advance common understandings. In the first place, such courses have the advantage of independent organization of content. Boundaries of the related social science disciplines can be crossed with impunity. There is more selectivity of materials for instructional purposes, which is a time-saving device, especially for students who are majoring in highly specialized fields

of knowledge and have few electives. The process of integration can be used more freely to understand complexities of modern life and see the interrelations between economic problems, political issues, and sociological questions. Thus instead of absorbing the vast content of one or more subjects in a special area of knowledge, students are trained to focus their attention on problems of the modern world which involve readjustments in the light of changed social, political, and economic conditions.

A second factor in favor of general education is the adjustment of courses to meet more specifically the needs of students in their everyday living. A major complaint against the established hierarchy of subjects was overemphasis on fulfilling prerequisites for the next course or satisfying the requirements of some prescribed curriculum instead of challenging the immediate interests of students which would result in a carry-over influence beyond the classroom. The charge was leveled particularly against history that too many facts had been learned in the classroom and that the students have thought about them too little. History taught in this way tends to become an encyclopedia of "correct" factual information to be learned about the past without the benefit of application to current situations. In this manner history could be invoked to substantiate conservative tendencies; thus fortifying students to resist changes which, if not made in time, could contribute to social disorganization.

In setting up these new courses to meet student needs, it should be pointed out that they are without radical implications of a controlled society, nor is there worship for any cult of change. Rather the guiding philosophy has been that we live in an evolving society in which changes are bound to occur. We cannot predict the future, but we can anticipate changes to make way for needed social improvements and better human relations. In this pattern of development change can be kept gradual enough so that we can make the necessary adjustment without passing through periods of confusion, bewilderment, and disorganization which accompany abrupt or sweeping convulsions that tend to loosen society from its moorings. If mankind is to solve the present predicaments, then it is essential to help the citizenry to clarify the issues and to understand that the history they record will inevitably affect them profoundly. Under these circumstances they have a right to discover some of the common denominators of what they ought to be and do, not only in the present but also in the world of tomorrow. General education courses are designed to help man realize his common needs and to make the world a better place in which to live.

A third development in general education that offers much promise is the experimental approach in methodology to make the content of these courses more real and meaningful in terms of improved social understandings, attitudes, and behavior. Facts, ideas, and concepts from the entire range of the social sciences are selected and presented to students in terms of their immediate needs and interests. Students are encouraged to think independently in order to reach deliberative conclusions. Problem-solving techniques are often used to implement this process, for the primary purpose of thinking is to formulate a conclusion. How to think is more important than what to think. Of course, the two are really inseparable, for how we think has a determining influence on what we believe. The problem-solving technique is also utilized as a motivating device to encourage students to read background material, to understand underlying causes, to gain a deeper insight of the significance, and to further better application to living in modern society. The carry-over influence beyond the classroom is much greater, for, although new problems will arise as changes in society take place, the individual thus trained

will have a procedure that gives him a more rational approach to comprehend the issues involved. Admittedly, it is very difficult if not impossible to secure objectivity in dealing with a current political, social, or economic issue, because preconceived notions, human prejudice, sudden impulses, and general inertia are involved. These predispositions, however, represent the crux of the educational challenge to be met. All methods, techniques, and devices that may improve the process of critical analysis to stimulate reflective thinking in order to formulate deliberative judgments are worthy of consideration. In this area of educational research we need more experimentation to improve the methods of teaching. To check the results, there should be a continuous evaluation program to provide suggestions for specific improvements.

Despite these strengths of general education courses in social science, there are certain weaknesses which should be pointed out. First, there is a weakness in this type of reorganization to the extent that these courses may have such shallow content as to defeat their own purpose. Short cuts that by-pass large areas of knowledge often do not provide good, broad avenues to learning. For a program that tries to accomplish so much in such a short period, there is a danger of superficiality. Students are exposed to so many concepts, ideas, and problems in economics, sociology, and government that the instruction has a spraying effect without really clarifying the issues involved. The charge of artificiality has already been made against some of these programs in that more is claimed than accomplished. To borrow a military expression, many of these courses lack "defense in depth." So much emphasis is placed on the front line of current happenings that the sustaining values of American life are not sufficiently understood and appreciated.

A second criticism involves the charge that many of these courses are not accomplishing the leavening influence they were supposed to possess from the standpoint of integration. The intercommunications of the related, highly departmentalized social science disciplines have not yet been sufficient to permit the concentration of resources from the various departments to develop a program that would maximize the opportunities presented in this field of education. To this extent, these courses are not serving the needs of students as well as they might and should. Too often the established departments treat the newcomer as an orphan or a stepchild. This lack of support has an undermining influence which must be arrested if the general education courses are to function in the curriculum successfully. The output certainly will not be greater than the input. Each social science discipline needs to think in terms of what it can best contribute to give the program a better chance to succeed. A hastily constructed social science program in general education does not give the movement a fair chance to realize its objective of serving the needs of students for living in today's world.

A third difficulty is in assessing and evaluating the results of the program. It is encouraging indeed to talk enthusiastically about the adjustments of students to a wide variety of life-situations. Quite a bit of the process, however, seems to rest with the individual student. Some students make the adjustments with the conventional courses; others fail to attain the general education which these newer approaches are supposed to provide. Some of these programs are losing their experimental drive and are already conforming to traditional patterns of instruction such as the lecture system, use of textbooks and syllabi, and comprehensive examinations, which measure factual content rather than significant outcomes, social adjustments, and functional citizenship. Under these circumstances there is grave danger that the general education courses in social science will be just some additional requirements for graduation without bringing to fruition the ad-

vantages claimed for them. The shift from the ivory tower to the watchtower has not been an easy transition. Will the plunging of students into courses designed to bring them face to face with the realities of the present political, social, and economic world adequately serve to establish the common needs of modern democratic society? There is still suspended judgment on this question, for we are still in the process of finding the answer. Fears are so prevalent, confusions so widespread, and situations so unsettled that it is extremely difficult to judge the immediate efficacy of the general education program in social science.

These courses carry no self-certification that all problems are met and resolved. Admittedly, the instructional tasks are many and complex, but we should remember that the education of citizens for a responsible life in a free society is one of the main objectives of college training. Perhaps these courses could be strengthened if each contributing branch of subject matter were re-examined to see its particular role in the total program and what specific contributions can be made to help underwrite the success of general education. It is in the light of this suggestion that American history is examined to determine how this field of knowledge might better serve the needs of general education.

In the first place, American history could give more depth to these courses and provide better backgrounds for understanding life in a democratic society. Some of these programs have shied away from history because it is a time-consuming subject, and there is the feeling that change has been so pervasive that historical parallels are decreasingly relevant as present guides. The historian has been accused of "lecturing on navigation while the ship is going down." True enough, many of the variables in present situations have altered radically enough to justify these suspicions, especially at a time when there is much criticism of the survey courses in American history. Yet, if we are to understand the present economic, political, and social forces that are fashioning modern society, it is often necessary to study the conditions that caused them to develop. Practically all present-day problems have roots that extend into the past. The study of history is concerned with causes that have led to world-shaping developments. History tends to give long views as to what is significant and permanent in the life of a nation. In dealing with the ills of the world, we are confronted with causes as well as consequences. Unless we take a realistic attitude toward the problem of change, many of the proposed solutions are likely to be superficial, palliative, and ephemeral.

American history can help to furnish a better climate of opinion for a more sober discussion of the problems that face our country. It is helpful to have a historical frame of reference for an understanding of present conditions with the many problems that confront us. Individuals in a democratic society are called on to make political decisions that influence social and economic policies. Functional citizenship implies a basic understanding of the alternatives available and some critical thinking as to the probable consequences of the choices selected. Many so-called "reforms" may bring short-term benefits but involve long-term dangers. It is easy to state a desired objective for these social science courses in general education such as "to provide the social knowledge which is a prerequisite to wise decisions of social policy," but the implementation of such an objective is not an easy task to achieve in the classroom. We can agree that the ultimate aim of knowledge about society is desirable social action. In this way we can lay the basis for intelligent attitudes that will make for wiser decisions. How can this be accomplished? Obviously, there is no magic formula.

It is not easy to understand the complex, interdependent, technological society in which we function as individuals.

Our age of specialization has produced a class of political and business experts and managers. It is not safe in a democracy to let the experts do the thinking for the people. American history can help to bridge the gap between the electorate and the officeholders. A large part of the task is to clarify and simplify the issues sufficiently so that the people can look upon their democracy as a participating partnership. Such an approach is needed to overcome public apathy and indifference which in large measure is based on the feeling that government is beyond the comprehension of the individual citizen and that there is no tangible way for him to make his influence count. Too many people in our society are swayed by unfounded hopes and fears which result in disappointments and frustrations. The democratic process bogs down with citizens who become panicky and are impatient to take the time and trouble to work out their own problems. Americans need to know that complex problems are not peculiar to their generation. Historically, the nation always has been passing through some kind of a crisis or faced with readjustments brought about by social change. Knowledge of some of the past crises that reach back across the time-span of our history should make us more patient in finding satisfactory means of resolving our present difficulties. To further our realization of what it means to live together in an organized, evolving society, we need some understanding of how people have lived together in the past. This historical approach could help develop attitudes, abilities, and tendencies for a more effective participation in a dynamic, democratic society.

A second contribution that American history has to offer is a stabilizing influence in the study of controversial issues in order to make better generalizations, exercise suspended judgments, and reach deliberative conclusions. Many of the issues today involve conflicting social, political, and economic interests. There are many organized group pressures upon society seeking to protect and expand vested interests which may be unjust to others and harmful to national welfare. In a democracy the conflict of ideas and opinions leads to many political, social, and economic conflicts which so often result in government by compromise. Democracy is not a static concept, for every generation has to meet and resolve its own problems. Thus the meeting of challenges, like the flow of history, is continuous.

In dealing with a controversial issue, it is usually a good idea to find out the origins of the problem. An understanding of the conditions responsible for the development of a controversy will give a better perspective for discussing the issues involved. This approach can bring a closer examination of each argument for validity so as to establish more rational means that will appeal to the reason rather than to the emotions. In the study of current events that precipitate bitter disputes, it is very difficult to obtain the pertinent facts of the case, and perspective is sadly lacking. It is often difficult to see the woods for the trees, for historical accuracy declines sharply in dealing with present-day happenings. We have an element of choice in a democratic society which helps to determine how much of the old should be retained and to what extent the new should be adopted. Although history cannot assure sure-footed judgments, yet it is possible to view recent events in the light of long-range tendencies in our history which may reveal significance and advance understanding of the deeper historical movements of the times that seem to indicate the direction of future trends.

History is constantly undergoing a process of re-evaluation, reinterpretation, and re-emphasis. Preliminary judgments are subject to modification when more of the relevant facts are known. The future is not revealed to us, for wars, depressions, inventions, and many other factors can alter the present course of humanity

and usher in all kinds of changes that at present lie beyond the horizon. It is impossible to predict the final score of a baseball game until it is completed, but that does not keep us from knowing the score from inning to inning as the game is being played. The same condition is true with the many conflicting elements in our society, controversial issues, and unsolved problems. It is not a choice of whether we play the game or not, for we are already in it. History will merely record how well we played the game. So it is with the march of events. Instead of being lost in what we may describe as some inexorable sweep of history over which we have no control, we need to reconcile our conflicting interests in order to realize our common aspirations in strengthening and improving our democratic society.

A third contribution rests on the assumption that, if history is to serve as a guide of experience, it should increase the sense of social responsibility and help formulate a program for constructive action. Democracy implies a participating citizenry. Certainly, we have reached a stage in our history where it is advisable to stop, look, and listen, for it is much easier to blunder into a policy than to escape its consequences. True, the record of history shows what was done instead of what should have been done, for we are constantly reminded of past mistakes that account for some of our present predicaments. The experience of history involves the making of decisions. The impacts of a world war, of a great depression, release social forces that are not easy to control. We have to live with the decisions we make, so it is up to us to do the best we can, subject to human limitations and possible fallibilities, instead of leaving our destinies to blind chance.

"To know today before we can shape tomorrow, we need to know the yesterdays" is a common expression heard among history teachers. The teaching of American history gives students the necessary knowledge of the past to evaluate present conditions and formulate basic ideas as to what the future has in store for them and their country. A study of American history develops better citizenship by confronting students with the facts and circumstances that have made their country great. By clarifying issues, these citizens are in a better position to become more intelligent voters. A knowledge of history can make good neighbors by teaching appreciation of individual differences and varying interests. A democracy presupposes that its citizens have been trained adequately to participate in the guidance of their destinies. To borrow a dictum from Sir Gilbert Murray, "a society without history cannot understand what it is doing."

American history can be utilized to better advantage both as a contributor to and a strengthening factor of the basic social science courses in general education. These suggestions do not imply a broad coverage of American history or even a general outline of principal developments. Rather, it should be taught selectively to throw light on contemporary problems. American history should face forward in order to help explain our present conditions. History presented in this manner should bring a better understanding for thinking through our urgent present-day problems. Many undisciplined arguments and stormy discussions provoked by lack of knowledge or fragmentary information of available present facts as well as ignorance of past experience could be avoided. The living past serves as an integrator of our experiences and aspirations which gives depth to our understanding, brings a stabilizing influence to our society, and affords a guide for constructive action. We need an active faith reinforced by determined efforts to develop adequate materials of instruction and educational procedures which will give reasonable assurance that citizens may not only recognize but also meet successfully the challenges of their times.

ON THE POSSIBILITY OF UNIVERSAL KNOWLEDGE

Richard Schlegel

It is commonly said today that no one man can know everything. Aristotle, Aquinas, sometimes Voltaire, are held up as exemplars of those who could know everything in eras when the sum of human knowledge had not grown beyond the possible capacity of one mind. Today, in contrast, a man must choose a specialty and hope with diligence to gain competence in it; or, if he is highly gifted, he may at most become well versed in two or three of the scores of fields of learning.

We shall here argue that this view of the necessary limitation of any one person's knowledge is either a trivial or an incorrect view: specifically, that it is trivial in so far as it is correct and that it is incorrect in so far as it is nontrivial. We shall maintain that one man can know the significant things that other men have known and that, indeed, our culture can hardly flourish unless some men of each generation are generally learned.

We begin by considering the literal meaning of the statement, "No man can know everything." This is obviously a true statement, but it also is a trivial one. There has been a virtual infinity of events in natural history, as well as in the subclass of human history; only a very imaginatively hypothecated god could know all these events. A mere man, even one whose profession is the gaining and keeping of knowledge, will hardly claim to know everything, even in one single field of knowledge. Generally, he will, in fact, have concentrated upon some subdivision of his general field. Thus a chemist may consider himself expert in organic chemistry. He will probably have further narrowed his research interests to a given phase of organic chemistry, as, for example, the structure of methacrylate polymers. He may well know "everything" about methacrylate polymers, in the sense of knowing all that chemists of his time know about them. But he would still not literally know everything about them, either in the sense of knowing every detail of all the scientific studies that have been made of the polymers or in the sense of knowing the history and distribution of all the methacrylate polymers in the world. It would seem, then, to be the case not only that one cannot know the unqualified everything but also that one cannot even know the "everything" about a small part of the world.

Aristotle, who is probably the paragon of omniscience among historic figures, certainly did not know everything that was to be known in his day. He worked with remarkable creativeness in almost all the fields of learning (the notable exception was in the greatest of the Greek sciences, mathematics); but it is, of course, absurd to think that all the knowledge in the minds of the Greeks of his day, even, say, in the field of the natural sciences alone, was in the mind of Aristotle.

What Aristotle apparently did have in his capacious and efficient mind was sufficient of the essential elements of the knowledge and ideas of the Greeks of his day to enable him to organize and add to that knowledge in a variety of fields and to perceive and adumbrate the basic assumptions of Hellenic intellectual activities. He was therefore able both to write treatises on various sciences and to establish a comprehensive philosophy of na-

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ture and of man's thinking and acting.

In a nonliteral sense it could be said of Aristotle that he knew everything—or, at least, almost everything. Very likely, for an artisan who wished to build a house or a metalworker who wanted to refine an ore, Aristotle would have had little specifically relevant information to contribute. But on all the topics which might be of interest to men generally—questions like "What is fire?" "How do fish live?" "Why do we have a government?" "What is worth while in life?"—Aristotle had a great deal to say to his fellows. He approached, it might be said, not the knowing of everything but the knowing of all the general things that are worth knowing.

Aristotle illustrates the second part of our assertion—namely, that in a limited but nonetheless significant sense one can know everything. Further, it seems to the writer that one can reasonably argue that to do so is not more difficult, but rather is less difficult today, than in any previous period of Mediterranean or Western culture. There is, of course, immensely more knowledge today about man and the universe than at any previous time, but, as in Aristotle's day, much of this is highly specialized to certain occupations. To know as much as does a professor of agronomy about grain crops, or a professor of engineering about material strengths, or a professor of psychology about ability testing would not be a goal of a modern Aristotle. Instead, the widely learned man of today would want to know the elements of the various fields of knowledge that have a relevance for the general questions that thoughtful men ask today, as in Greek times. These are the questions about the natural universe, about man and his problems of living with other men, and about the significance and orientation of our human experiences. There is a vast array of learning today that does bear on these questions: discoveries in all the natural sciences, the basic developments in psychology and the social sciences, the explications of logic and language, the creative suggestions of philosophers and poets. Man in 1952 is faced with a formidable task in gaining universal learning, but it should not be represented as a hopeless task.

It is sometimes stated that, as a science grows, the gaining of a knowledge of the science becomes more difficult. In part this is true, in that the amount of factual material in the sciences increases with their development. But there is a compensating factor; as a science develops, it usually gains in the deductive relations between its facts, in the "tightness" of organization of the various propositions of the science. Hence, in a mature science the student gains more understanding, over a broader domain, with a given amount of study, than in a less highly developed science. The atomic theory, for example, when once understood, gives the student a basis for understanding a multitude of physical phenomena, such as differences in various kinds of matter, diffusion and mixing, heat conduction, expansion and contraction, crystalline and noncrystalline structure. The addition of a knowledge of the structure of atoms themselves enables the student to understand phenomena of light radiation and absorption and of chemical reactions. In a less highly developed physical science, thorough study of the phenomena of gaseous diffusion and chemical change might be a study of phenomena apparently isolated from one another and with no connection or assistance-to-understanding as far as any other phenomena are concerned. Likewise, in an era which has gone far beyond our present one in scientific development, we can think that the student of physics, psychology, and the social sciences will not have to master three different and largely disparate bodies of method and assumption, as is the case today, but will be able to study a fundamental science that is basic to fields which are now just beginning to find common ground.

One factor, then, that aids modern

learning is that a great increase in the factual material of the sciences is generally accompanied by better organization and generalization among the facts. A second important point is that an increase in knowledge does not necessarily mean that there is now new material to be learned, where before there was none. Much that is gained in science or scholarship is not an addition to knowledge but a correction or replacement of error. An alteration in our presumed knowledge, in contrast to an addition to it, does not particularly increase the burden of learning required of the generally educated person. There was, for example, a highly developed science of astronomy in Aristotle's day and also in the thirteenth century of Aquinas. Much of the astronomy of those times is now of historic interest only and has been replaced by a far more adequate astronomy. For the completion of his learning, however, a man of 400 B.C. or of A.D. 1300 would have had to study considerable astronomy, just as today. Chemistry, to take another example, would by today's standards have been a meager science indeed in 1700. Yet Newton spent a considerable portion of his scientific energy on the alchemy of his day. And then as now, men of science no doubt generally considered chemistry (or alchemy) a major component in their scientific education.

Further and more detailed examples could readily be given of the discarding of old concepts and explanations in the history of science. With respect to universal learning the essential point is that each generation of scholars, at least in the view of succeeding generations, learns a lot of error and nonsense as well as truth. The percentage of truth is, we hope, on the increase; but each generation, not knowing which will be which to a wiser future generation, diligently studies both the error and the truth. An increase of knowledge, therefore, does not necessarily mean that there are more books to be mastered or further techniques to be learned. It may mean this, if the increase results from an exploration of altogether new aspects of the world; but frequently the increase demands a dropping of an old package of learning, now labeled "wrong," for each proper new parcel that is acquired.

The goal of universal learning seems, then, to be as reasonable a one today as at any other time. We can expect that only exceptional people will come very close to that goal; however, the ideal of such learning does seem to be playing a role of increasing importance in our higher education. I refer to general education, which is an effort to give college students some knowledge of the major fields of learning. General education programs do not propose in any sense to produce students who have mastered all significant knowledge, but they do propose, as I understand them, that there is a universal knowledge, not confined to one or a few fields, which should be possessed by all educated people.

The general education programs originated as a result of the proliferation of various fields of learning into an increasing number of specialized fields. The number of elementary courses in the college catalogues likewise increased, each such course being an introduction to a highly specialized field. A student could not take all the elementary courses; and much of the material in each of these courses was of interest only to the student who expected to do advanced work in the specialized field of the elementary course. Hence a student who had time for one course in biology might study botany for a year and learn many interesting things about plants, but still come away from college ignorant of the distinction between the small and large intestine. General education programs can be effective solutions to the educational problem posed by the multiplicity of fields of learning. They rest on the assumption that a central structure of theories and facts which are of particular relevance to men generally can be extracted from a combination of different

sciences; that, for example, a unified course of study in biology that covers important aspects of all the various biological sciences may be constructed and presented. Twenty-five years ago the college hoped to give its graduates an elementary knowledge of a few fields and a more specialized knowledge of perhaps one or two fields. The general education programs do seem to assume that an elementary knowledge is desirable in all the significant fields of learning.

The manner in which general education programs have been set up illustrates the increase in the degree of organization among scientific facts which accompanies the growth of science. The individual courses of these programs usually carry such titles as "The Social Sciences," "Physical Science," "Biological Science," or perhaps a single course in "The Natural Sciences," "History of Civilization," "Humanities." Perhaps in the humanistic fields there has been no particular increase in organizational unity; studies of music and architecture, for example, may be no closer (or no farther apart) now than they were two hundred years ago. But the sciences have gained much in unity. Physics, chemistry, astronomy, and geology do now have problems and doctrines in common—likewise, economics, sociology, and political science. In some general education programs, courses which are relevant to all the fields of learning have been introduced as "integrative" courses, which proceed in terms of general scientific method and the concepts of language and logic or in terms of philosophical ideas which touch on all the fields of learning.

General education courses usually operate on the freshman and sophomore levels. On the higher educational levels there has not been a comparable emphasis on universal learning. Still, there are signs of change in this respect. Interdepartmental programs for Baccalaureate and advanced degrees, as, for example, in American civilization, have been developed in several institutions. A general-science Bachelor's degree, which provides a somewhat more than elementary training in mathematics, physics, chemistry, and biology, is a possibility for a good student under present curricular arrangements. Such a degree has not yet been commonly established but may well be, as the advantages of such training become more apparent, both as a foundation for advanced study and as a preparation for working on the many scientific problems of today which genuinely are mathematical-biophysico-chemical problems.

It is of interest to ask what role universal learning may have in individual and social life. For general education programs—which have, of course, very modest aims by the standards of one who is deeply learned in many fields—the question of purpose is often answered along the ready lines of "it is highly desirable that people know something about all aspects of man and his world." This is perhaps an adequate answer, albeit not a particularly penetrating one. There is intrinsic interest in the question of what purpose is served by universal learning in its fullest sense; and, any discussion of that question might incidentally give some specification of the goals of general education programs.

As has already been indicated, one of the motivations for extensive learning is to find the answers, as far as they may be known, to the many questions about our world which occur to all those who are not devoid of curiosity and reflection. This motivation must exist to some extent in all normal children. Many people appear already to have lost most of it by college age; for them, if they attend a college or university, the good intentions of a liberal education program are probably largely wasted. Others retain an impersonal curiosity about the world around them throughout life. These people, although usually largely occupied by some specialized profession or activity, seek to live with a rich knowledge of their en-

vironment and are all candidates for the degree of "doctor of general knowledge."

The universal learning which comes as a response to natural curiosity, and is valued entirely for its own sake, may be distinguished from a universal learning that is useful and necessary to a person in his or her vocational activities. This distinction is an artificial one, in that probably the two aspects of learning are usually not independent of each other in any given individual; but the distinction is useful in the analysis of the role of universal learning. There are many activities in which a great breadth of knowledge is necessary. Mention has been made of problems in the natural sciences which require close knowledge from many of the various scientific fields on the part of the investigator. There are likewise many problems in the social sciences which demand knowledge from various traditional disciplines on the part of those who would elucidate those problems. In humanistic scholarship a single example, the field of history, with its requirements on the professor of a given historic period of acquaintance with languages, political and social institutions, and artistic and scientific activity of the period, is a sufficient indication of the demands for universality. A less academic profession in which wide knowledge is required is that of the critic. Some members of this small but persistent profession are highly specialized; but others, notably perhaps book critics and those who take our culture generally as their domain, base their perceptions and standards on a very broad foundation of knowledge.

There are many administrative positions in which broad learning is required. Research directors in laboratories working on diverse problems, administrators of many-sided educational institutions and foundations, editors of certain kinds of periodicals, perhaps business executives in some cases—these people often need surprisingly extensive knowledge in many fields. To know people of such wide knowledge is usually a pleasure, as is generally acquaintanceship with any kind of flowering beyond the level of mediocrity. In a well-governed state, we might expect that the high officials of government would be persons who possess, among other attributes, the highest order of universal knowledge, since government does touch upon practically all human activities.

The alert man moves toward universal learning by his interest in the world about him, and the man of affairs requires elements of universal learning in his various administrations. The broadest learning, however, and that on a level which approaches the expertness of the specialist in each field, is that required of the philosopher. And it is among the philosophers that we are most likely to find those who in any one generation may properly be considered men of universal learning.

Philosophy is frequently a mere matter of words, a playing on the surface of things that serves only to hinder the illumination of inner structure. Some philosophers, however, perceive some of the assumptions that are fundamental to the science and doctrine of their eras and critically discuss those assumptions, perhaps suggesting modifications. This activity requires, in addition to insight and analytical ability, a close knowledge of the special fields whose assumptions are to be delineated. If the philosopher is to unify—or perhaps adjudicate between—the assumptions of experience generally, he must then have some acquaintance with a wide variety of fields of learning. It must be emphasized that there is no "science of first principles" as such, as has been sometimes naïvely asserted. First principles subsist in a most intimate and dependent relation to the more detailed knowledge to which they are first principles. Thus, for example, speculations about space and time as such did not lead to the twentieth century's revision of our concepts of space and time.

Instead, that revision came from the realization by a scientist, Einstein, that the utilization of space and time concepts in the detailed understanding of physical phenomena required a revision of those concepts. And, in respect to his work on space and time concepts, Einstein is considered to be a physicist of first philosophical significance.

The philosopher as we have described him will not be found among the common run of men, but his kind does exist. Among historical figures, Aristotle perhaps does most nearly approach the philosopher who elucidates the fundamental elements of all the knowledge of his day. In our own generation, Bertrand Russell and the late A. N. Whitehead are two who have approached the philosopher's ideal of learning, and similar contemporaries could probably be named in some of the non-English-speaking nations. Both Whitehead and Russell had a thorough education in mathematics; and a knowledge of mathematics is probably the keystone in any edifice of universal learning today, since mathematics and the mathematical sciences provide the basis of both the content and the method of our contemporary natural philosophy. The elements of the social and humanistic studies can apparently be acquired along with the mathematical sciences by a properly gifted person without too great difficulty. A third and completing element would be the addition of a thorough education in the biological and psychological sciences, with some further experience in psychiatry. In our day, apparently, no one has been sufficiently intrepid to try the experiment of so completely educating himself.

It must be a characteristic of the widely learned philosopher that his knowledge has been gained for an intellectual or philosophic purpose: There would be little merit in one man's having the knowledge of half-a-dozen special fields, with no discernment of relations or common elements among the fields; one might then just as well have six different men, each learned in one field. The philosopher gains knowledge because he requires it for the understanding of a given domain of the world, and that understanding, philosophically considered, in turn has an effect on how some different aspects of existence are to be evaluated and understood. Thus Whitehead, on the basis of wide learning in the sciences, gave a critical presentation of the simple materialism which underlay most of nineteenth-century science, and, further, he emphasized how much the science of today has deviated from that point of view, and both requires and is leading to a far different fundamental outlook. Going beyond the natural sciences, Whitehead seemed to be able to make highly suggestive comments about fundamental problems in education and the social sciences, on the basis of a set of assumptions about the universe that had their origin in knowledge and speculations concerning the natural sciences. Bertrand Russell carried out a critical study of mathematics that eliminated much of the previously assumed "absolute truth" of mathematical and logical systems, and similarly his critical writings aided in the discrediting of many unjustified prejudices in the realms of ethical and social beliefs.

The value of a genuine philosopher to his society is not easily estimated. But we may consider that ideally the philosopher gives awareness and direction to a society by the very activity of emphasizing the bases on which the varied knowledge and ideals of the society rest. It is not the fate of very many men to become creative philosophers of the first rank. But some degree of universal learning among men who are primarily specialists in a single field has the highly desirable property of allowing men of different specialties to discuss questions that are fundamental and common to different fields of learning. The devoted specialist,

active in a particular field of research, is the key figure in the development of science. Still, it seems to be a sign of intellectual vigor when people of widely differing specialties discuss common philosophic problems and, contrariwise, an indication of somewhat sterile specialism when two individuals meet, discover that they work in different fields, are therefore politely ignorant of each other's work, and are careful not to go beyond trivial everyday concerns in their conversation.

Universal learning, in spite of a continuing increase in total knowledge, does not become impossible of attainment, because increased knowledge brings increased generality and degree of organization and also results in the discarding of previously accepted arrays of learning. General education programs are an indication of a working belief in both the feasibility and the desirability of universal learning. The greatest need for such learning is as a basis for discovery and understanding of our primary postulates and motivations. In a trivial sense it is, of course, true that no one can know everything, but it is both possible and necessary that some people of each generation have a knowledge of the significant elements of all the fields of learning.

ESCAPE FROM CHAOS

Oliver L. Reiser

In a democracy the task of re-creating our social institutions is a never ending one. Until we attain the state of completely evolved organisms perfectly adjusted to a static environment, this need for social reconstruction will continue to be one of our major concerns. Educators, therefore, should always be sensitive to the necessity for perpetually criticizing the theories, the methods, and the implications of their enterprise.

The more general criticisms of the structure and the operation of our educational systems are familiar to us. We frequently hear the charge that our education is fragmented into departmental subjects and that no one knows the overall pattern, because there is none. This is one of the symptoms of what is now called the "chaotic university." Another criticism, equally familiar, is the charge that our education is overintellectualized (or underemotionalized) to the point where there is little drive behind academic studies. We do not generate a powerful urge on the student's part to learn and apply; there is little of the passion for the truth that might help to re-create our disintegrating social order. A third criticism is that our educational systems provide little opportunity for creativity on the part of the learners, who merely acquire a knowledge of what others have achieved but do not acquire techniques for thinking creatively or acting constructively.

Undoubtedly other criticisms readily come to mind. But the foregoing certainly point up some obvious defects, and I have selected them because they seem to me to represent a correct analysis—as far as it goes—of our current education at the college and university level.

It is rather obvious that the sense of urgency is stronger today than at any time in the past. Many observers have called attention to the fact that we live in a no man's land, between a world that is dying and a world that is still to be brought into being. In such a situation university teachers believe that the universities ought to play a major role in the salvaging of the great human adventure. However, educators as a class have little of the sense of guilt that haunts some of our physicists—J. Robert Oppenheimer, for example, who notes that many physicists feel that in some real sense they have known sin. As yet, social scientists have experienced little of this sense of guilt, partly, I suspect, because they are emancipated from the theological impedimenta of our physicists and partly because, up to now, social scientists have had little to do with what actually happens in society.

Physicists are disturbed, of course, because they know that they are the mischief-makers who opened the Pandora's box of nuclear energy. Much of this knowledge is the product of university research work, so that the charge that the answer of educational atomism to the modern world's crisis was given at Hiroshima contains a smidgen of truth.

But occasionally there is a law of polarity in human affairs—or is it perhaps the swing of the pendulum from one position to its opposite? In any case, it seems clear that when the physicists released the forces that split the atom from the

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inside, they also gave a considerable impetus to those forces that ultimately will produce integration in education, provided that these forces are not submerged by some overwhelming cataclysm. What we have in mind, of course, is summarized in the general recognition that the atom has made politicians out of scientists and scientists out of politicians. Up to the present, neither politicians nor scientists have performed brilliantly in the new fields into which nuclear fission has forced them. But presumably both groups will learn from each other, and in the long run the effect is likely to be beneficial to all.

These developments have forced upon the rest of us the consideration of those human values in education which ought to be the common goals of all education—whether this be in the natural sciences, the social sciences, or the humanities—the attainment of which is essential if we are to have a good society, or perhaps any world at all.

It would not be difficult to make a list of those over-all values and attitudes which we generally agree education should foster but which lie outside the factual content of departmentalized courses. Such objectives as "good citizenship," "intellectual integrity," "emotional sensitivity," "reverence for life," "passion for facts," and the others would generally be accepted as over-all goals, and failure to achieve these aims results in an education which, for all its fact-centered content and development of vocational skills, turns out slavish and mediocre mentalities.

In looking over the objectives of the "general education" courses that many of our colleges and universities are setting up, one finds such stated purposes as "understanding of principles, patterns, methods, meanings, and implications of facts" and "penetration into the nature and significance of materials studied rather than spread of factual coverage." These broad aims—such as learning to think competently in a variety of contexts—are part of the more inclusive goal of general education: the desire to provide a common intellectual meeting ground for men of diverse interests and knowledge.

In discussing the question of how to achieve these worthy aims, I shall relate my discussion to two areas of higher education—the undergraduate level and the graduate level. It is necessary to bifurcate my discussion in this fashion because my thinking up to this point has resulted in the following conclusions: (1) the student who gets the above-mentioned over-all values common to all subjects will get them primarily (though not exclusively) from the general education courses; and (2) for education on the graduate-school level a new "Division of Integrated Studies" (the name is tentative) needs to be developed, and in this division courses should be constructed which come closer to the ideals of *integrated education* as something beyond the goals of *general education*.

We do not deny that it is possible to develop a "sense of accuracy," "ability to think," and the like within our present department offerings, in Physics 1 and 2, let us say; but such general aptitudes or skills as "penetration into principles, methods, and patterns of meaning" are more likely to come in the general education course in Physics 1 and 2. This, however, is general education on the undergraduate level at its theoretical best.

But for the level of graduate study this is not enough. Presumably by this time the students in the graduate school should have assimilated the attitudes and values of a general education. The aims and procedures of general education, working within the three distribution fields and perhaps even across them, are to develop attitudes and values and methods useful to good citizenship outside our subject-matter specialties. Evidently, this type of education would still be adequate for the

level of graduate study, provided that the needs of graduate education presented no additional problems and provided also that there were the same three major distribution fields within which the student was expected to take some of his work—which is frequently not the case.

It is not easy to discover wherein general education differs from integrated education. To me, integrated education represents the conscious striving to produce content courses of ideas based on the sum total of human knowledge. That is, general education works within distribution fields in the hope of producing supra-departmental attitudes and skills. Integrated education is not content to stop at this point. It results in a difference by way of addition rather than subtraction. The aim of integrated education is to assist the student who proposes to major in some specific subject or area—the engineer, the teacher, the scientist—to develop or formulate a body of ideas that will be useful in forming judgments and arriving at decisions which have broad social implications and consequences.

Clearly, the assumption behind the foregoing argument is that the candidates for advanced degrees are the potential leaders of our future society—in education, public health, politics, science, and the rest—and they need to have their attention directed toward the social demands, the possibilities, the facilities, and the methods for the integration of knowledge not only within the area of their specialty but between fields, as, for example, physics and politics, biology and sociology, economics and politics, psychiatry and ethics and religion.

Up to this point the discussion has been general. Let us now take as our point of departure the fact that many universities have the three distribution fields of the natural sciences, the social sciences, and the humanities. We know that these subdivisions are largely the product of historical developments which, in turn, have some basis in differences in subject matter as these differences have been solidified into the content of these "fields." One present consequence of this development is the rivalry that has grown up between the "sciences" and the "humanities," with the vested interests in each field now organized to defend their "rights."

The story of the conflict between classical education and natural science education cannot be recounted here. Suffice it to say that the social sciences, which might have served as a bridge of understanding between the natural sciences and the humanities, for one reason or another have not functioned in this manner. And so the rivalry is still unresolved, in spite of such brave efforts as F. S. C. Northrop's *Logic of the Sciences and the Humanities* to find a common ground.

It is my impression that this dualism of the "scientific" and the "humanistic" is at the root of much of our trouble, intellectual and social. If we could devise courses in integrated education which would cultivate a rapport between both fields and within the same individual who shares both interests, the rivalry of "art versus science," for example, would vanish. It might be possible in time to develop courses in the physics of politics as well as the politics of physics, the art of mathematics and the mathematics of art, the humanity of science and the science of humanity, and so on.

These are several possibilities. Of course, some oddities could result. There is the story told about the professor who gave two courses—one on the history of philosophy and the other on the philosophy of history—and, to move from the first to the second course, he simply took his notes and read them backward! This, of course, is not what we have in mind. The psychology of philosophy is not the philosophy of psychology.

I have recently read two important discussions of the problem of the relations of the sciences and the humanities, one

by Richard McKeon[1] and the other by Philipp Frank.[2] Both authors are concerned with breaking down what someone has called the "spite fence" that separates the two fields. Both authors, from somewhat different approaches, seek to show that the same material can be treated either humanistically or scientifically and that the difference lies not so much in the subject matter one studies as in the type of question one seeks to answer.

According to McKeon, any great work of science—for example, Euclid's *Elements,* Newton's *Principia,* or Darwin's *Origin of Species*—is subject to scientific, social, and humanistic analysis. That is, it may be studied in terms of the techniques by which statements and hypotheses are tested; it may be studied with reference to the social circumstances which determine the problem in its origin and condition its solution, including here a survey of the impact of that solution on the social context; and, finally, the same work may be considered as the expression of a man and his personality.

In much the same manner, as McKeon goes on to observe, a great work of literature, like *Oedipus Rex,* the *Divine Comedy,* or the *Brothers Karamazov,* is subject to scientific, social, and humanistic analysis. Thus for McKeon the subject matter of the humanities is the great works of man in the sciences, in institutions, and in the arts; and general education is not unified by the discovery of a universal method, but by a complete analysis which answers the types of questions which need to be asked if we are to have a complete understanding of a subject.

These conclusions are somewhat similar to those presented by Frank in his stimulating book, *Modern Science and Its Philosophy.* In his chapter on "The Place of the Philosophy of Science in the Curriculum of the Physics Student," Frank points out that there are two angles of approach to the study of scientific theory —the psychological-historical study and the logico-empirical. Thus both McKeon and Frank agree, apparently, that the humanistic study of the sciences would be concerned with the personal and social elements involved in the production of great works of science, whereas science, studied scientifically, would be concerned with the internal structure of ideas, the inner relations of propositions to one another and to the world of facts to which these ideas are relevant.

It is not at all certain that both types of analyses, scientific and humanistic, can and should be done by the same teacher in a classroom. The ideal, evidently, is for one person to have the competence to do both jobs at once. But it would be difficult to find a science teacher who can humanize physics or a humanities teacher who can analyze the humanities scientifically. Such a double-duty teacher would require a breadth and depth of understanding which go far beyond the equipment of most of today's teachers. If, however, we could in time develop graduate-school courses that provided the teachers with this background, such two-sided education could be made available.

Up to this point we have been exploring the possibility of a program for studying the humanities scientifically and studying the sciences humanistically. This, we have agreed, is fine—as far as it goes. But, as a program for graduate study, it does not go far enough. As I see it, our next major enterprise is nothing less than the immense job of putting our specialized bodies of knowledge together to see what it all means, to get an over-all picture of the nature of man, the nature of the universe in which man lives, the possible interrelationships of man and nature, and a clearer picture of the best kind of society for men to live in, in the light of

[1] "The Nature and Teaching of the Humanities," *Journal of General Education,* III (1949), 290–303.

[2] *Modern Science and Its Philosophy* (Cambridge, 1949).

what the sciences and the humanities tell us about both man and nature. That, it seems to me, is the most important intellectual task our universities now have to face.

In order to obtain some idea of what this may mean—a preview of the sort of integration of knowledge which might provide the core for an integrated education—let us supply ourselves with some necessary building material from the intellectual history of the Western world.

What we have in mind here involves a brief excursion into the field of the interaction of social institutions and scientific concepts. The idea is that science, in its interests, types of problems, and even its explanatory concepts, bears some functional relation to the culture patterns and institutions of the society in which that "science" grows up and survives. That is to say, science is not an absolute, self-sufficient atom of intellectual activity; it is a process and a product that occur within a social context. This idea, of course, is not novel: one finds such thoughts in Oswald Spengler's *Decline of the West*, Erwin Schrödinger's *Science and the Human Temperament*, Lancelot Hogben's *Mathematics for the Millions*, and other studies.

In the course of an exploration into this field, showing that the specific explanatory concepts we employ in science have a discernible social background, one comes across the paper by B. Hessen on "The Social and Economic Roots of Newton's *Principia*," presented on the occasion of the Second International Congress of the History of Science and Technology, in London in 1931.[3] Hessen traces the relation between Newtonian science and the economic forces of the England of that period. The idea that there is an underlying connection between Newtonian dynamics and the general social conditions provides an intriguing thesis. In this particular instance the analysis represents a Marxist viewpoint, presented by a Soviet delegate, and it presupposes the familiar Marxist approach that seeks to demonstrate how economic factors influence and determine ideological formulations.

But further reflection on the part of a non-Marxist investigator reveals that we have here only half the story. The other half brings out the manner in which scientific and even philosophical ideas recreate the social culture, in some cases giving rise to new methods of production. The validity of the other half of the story can be substantiated by reference to the theory of J. G. Crowther as touched upon in his book on *Famous American Men of Science*. Here Crowther points out that Newtonian mechanics had a significant influence on the framers of our own Constitution, partly direct and partly indirect, through such intermediate figures as Montesquieu.

The sanction of Newton's immense prestige was thus given to the notion of government as a self-regulating mechanism. For example, after God created the atoms out of which the universe was made, the laws of behavior were imposed by the supreme authority; therefore, the laws of nature were not mere human conventions, but were natural and inviolable; and so on. This conception crept into the constitutional law embodied in our form of government, in the manner just indicated. Perhaps the most interesting feature of this development appears when we recall that the only physical scientist in the Constitutional Convention was Benjamin Franklin, and, since Franklin's scientific work was in the field of electrodynamic developments, he was not dominated by Newton's authority. This is the reason Franklin was able to escape the legalistic formulations of the lawyer members of the Convention. Franklin, accordingly, managed to achieve a measure of skepticism about the system of "checks and balances"

[3] B. Hessen, "The Social and Economic Roots of Newton's Principia," in *Science at the Cross Roads* (London: Kniga, 1931).

which found sanction in the Newtonian type of explanation applied socially.

The foregoing considerations call attention to a very interesting problem. If it is true that social concepts and institutions control in a degree the meanings of the explanatory concepts of science and if science as a process, as a product, and as a set of techniques in turn re-creates society, so that we have a real case of reciprocal causation (the cyclical relationship now described as a "feed-back" or "servo-mechanism"), where does this leave us with respect to the proper place of science in society and society in science?

It is true that this issue is not new to the world: great pioneers in science—men like Galileo and Darwin—were familiar with it. Today the scope of the issue is broadened; no science is exempt. Currently the controversies of Michurin-Lysenko genetics versus Weismann-Morgan genetics and the problem of freedom of exchange of knowledge in the field of atomic energy developments are among the more familiar phases of this debate over the proper relation between "science" and "society."

As one looks into the future—say, one hundred years hence—one wonders what kind of society people are likely to be living in, in view of the impact of coming scientific developments. And what will science be like, if its explanatory concepts are subject to evolution? Before he died, A. N. Whitehead was developing an "organismic physics" and using such terms as the "electromagnetic society." Perhaps, then, some future Benjamin Franklin or Whitehead or Einstein may give science some new twists that will reshape the form of scientific theory. Or, perhaps, will some future Alfred Rosenberg twist the framework of science to fit the needs of some recrudescent fascism?

Among contemporary thinkers, John Dewey seems to be most alert to the crucial nature of the problem. In *Logic: The Theory of Inquiry* Dewey makes the distinction between two levels, the level of scientific methodology and the level of social-institutional practices. Our institutional forms represent the "use-enjoyment" phase of what are commonly accepted as "common-sense" activities, whereas scientific methodologies express what is going on at the highest level of intelligence. Against this background, Dewey is concerned with the problem of getting a larger measure of intelligence into the ongoing institutional processes.

Hostile critics of Dewey's philosophy dismiss his theories on the grounds that he has no absolutes and is therefore enmeshed in a tangle of relativities, which provides no escape from a "vicious-circle" situation. But it must be noted that the problem—should science control and change society or should society regulate science—is not an either-or proposition; it is not a vicious circle. Mankind is on a merry-go-round, to be sure; but it must also be observed that life grows into the ever receding goals. Our problem is not how to stop or jump off the merry-go-round but how to control the speed at which the wheel of social change revolves so that the r.p.m.'s do not increase to the point where the revolving globe flies into pieces.

It would be presumptuous on my part to suppose that I know the answers to these problems. I suspect, however, that some part of the answer to the question of the proper relation of science and society is contained in Charles S. Peirce's theory of the "unlimited community." But in any case I am not now concerned with outlining solutions. My plea here is that we think about a program on the level of graduate study wherein such problems can be given proper consideration.

This is not merely an "academic question." Our Doctors of Philosophy are not only specialists who must make a living by mastering the skills in their chosen major fields of study; they are also members of the larger community who must participate in the formulation of policies

that will affect everyone in that society.

The most obvious solution to the problem would be to look at the profile results of those who have taken Graduate Record examinations (or the equivalent), and then recommend to those students who, let us say, stand high in the humanities or social studies and low in the natural sciences (or vice versa) to make up the deficiencies and balance their attainments.

But, as we have already stated, this solution is too obvious and too easy. It is not enough for the student of economics or politics to master some information in atomic physics or for a major in electronics to be compelled to take work in the field of the social sciences, good as that may be. What is required is that each graduate student, working with instructors who have this interest, should labor to put together information taken from different fields. This might encourage and extend the habit of synthesis which our world must have if it is ever to attain some sort of over-all vision and wisdom.

The results of such efforts at synthesis, at least in certain instances, might look like a cross between "social physics" and "cybernetics"—or who knows what oddity? But even though the product of cross-fertilization be a monstrosity—such as Korzybskian semantics mated to Rhine's "ESP"—we would still be in a position to examine and refashion the product. Surely we can all agree that it would be better to proliferate these intellectual hybrids first, and then later on give them social existence and institutional embodiments, than to move blindly into a world of biological and social monstrosities created by atomic warfare. Such random mutations will only give us a world we did not consciously create, did not foresee, and do not want, once we find ourselves in it.

The extraordinarily difficult problem of how to weave the knowledge spun from the social and humanistic studies into the fabric of political and economic institutions is one we cannot consider in this paper. Before we undertake to translate social theory into institutional practice, we must produce the body of wisdom which is the prerequisite of any social engineering. And so we return to the need for courses that shall be concerned with the direction and control of man's future evolution. Faculty members in the graduate schools who have developed courses along the lines of integrated knowledge could offer such courses in a new department, the "Division of Integrated Studies." In offering such courses, the instructors do not pose as "experts in integration"; like their students, the teachers are seekers after the unification of the sum total of human knowledge. But any final ideology would be the end-result of such a search, and this would be worked out by each student as he, along with others, carried on the relentless quest for that supernational, superracial, superparty, superreligious body of truth, the discovery and articulation of which has provided the incentive for most of the science and philosophy of the Western world since the time of the ancient Greeks.

This last observation brings us back to the common values which are the concern of all liberal education. The cultivation of a respect for the best in our cultural heritage is certainly one of the major educational aims we all share. Of course, this tradition is complex, but the part of our Western heritage that impresses me most of all is expressed in the slow but relentless establishment of a tradition of universal knowledge—a tradition first enunciated by Pythagoras, Socrates, Plato, and Aristotle and passed on by them to later generations. It seems to me that the finest flowering of the spirit of man is to be found in this everlasting striving for universal principles in science, art, politics, philosophy, and perhaps ultimately even in religion.

The most awesome discovery of the

human mind is the discovery of the reliability and underlying harmony of the processes of the natural universe. Man's endless search for order and the immense success that has attended this search for orderly interrelations validate this growing confidence in the uniformity of nature. But scientific humanism finds it difficult to believe that there exists a body of truth on the basis of which the physical sciences can be built, but no corresponding body of principles about the nature of the human mind and of social evolution. Rooted in the assurance that there is an understandable regularity behind the welter of events, scientific humanism holds forth the hope of the ultimate synthesis of knowledge to be reached by multiplying and co-ordinating our efforts. This confidence in the possibility of the conscious control of man's future evolution is necessary to the stabilization of the world of the future. Synthesis must become the great magnet which orients us all, as we seek the long and broad view of the processes of nature and society.[4]

It is important to observe, however, that such an enterprise is not a "one-man" effort. The reservoir of wisdom will have to be the product of the sustained efforts of research teams that have learned to think and work together in assembling and weaving together the fragments of knowledge to produce one comprehensive world philosophy. Our supreme need today is for "operational research" on a grand scale to create a planetary wisdom for all mankind. It is time to get started on the central theme of synthesis. What valid reasons are there for further delay?

[4] My own notion of such a project has been outlined in a paper, "A Temple of Knowledge," *Main Currents in Modern Thought*, VI (1948), 35–39; see also Reiser, *World Philosophy: A Search for Synthesis* (Pittsburgh: University of Pittsburgh Press, 1948).

SOCRATES AT VIVENZA TECH

Willard O. Eddy

TIME AND PLACE: *Late afternoon. Dimly lighted office in Old Main on the campus of Vivenza*[1] *State College of Science and Technology. Professor Swink has just completed tabulating the marks for a class in English composition. As he looks up, the Shade of Socrates confronts him.*

SWINK: Socrates!

SOC.: You were recommended as one who might give me knowledge regarding some features of the curriculum.

SWINK: Gladly, Socrates, if I can. I have long admired you as one of the great teachers.

SOC.: Then I presume that you make extensive use of my method. Tell me, my friend, precisely what is your function?

SWINK: My function, Socrates, is somehow to teach the students to use the English language effectively.

SOC.: An interesting mission. We had comparable teachers in Athens, as you undoubtedly know. And may I ask how you go about making the work effective?

SWINK: It isn't easy, Socrates. Many English teachers quite frankly regard the work in composition as somewhat of a chore, a period of apprenticeship to be escaped as soon as possible.

SOC.: Their attitude is surprising, Professor. As the midwife of ideas, the teacher must discover and develop the capacity for wisdom on the part of the students. And is this not always a privilege and a pleasure?

SWINK: It should be.

[1] "Vivenza was a noble land."—HERMAN MELVILLE.

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SOC.: And what, my friend, could be more exciting than to contemplate the nature of knowledge, to study the doctrines of influential thinkers as to how we may acquire it, and to submit their ideas to the test of dialectic? Could anything be more delightful than this?

SWINK: It appears that I have failed to state the nature of our task adequately. You see, Socrates, in most of our courses we do not ponder the nature of knowledge. Our students are not prepared to study the doctrines of the great thinkers. Most of them have all they can do to master the bare rudiments of beginning composition.

SOC.: I expected more advanced students at college level.

SWINK: You must realize, Socrates, that Vivenza is a democracy and that this college is a state institution. Any graduate of an accredited high school is eligible to enter. Many of the students are woefully weak in language skills. You probably would regard them as practically illiterate. They can neither read nor write except in a most inadequate sort of way.

SOC.: Continue, pray. How do you go about teaching them?

SWINK: Our chief course in this department is freshman composition. It is required of all students. Sometimes we have nearly as many sections of that as of all other classes combined.

SOC.: I fear that I shall never master the modern curriculum. Would you explain, please, just what is done in this—this required course?

SWINK: In many respects it is representative of what is done in numerous colleges and universities. The first quarter of the course is devoted chiefly to the mechanics of writing—punctuation, gram-

mar, sentence structure, paragraph construction, and vocabulary work. We aim primarily to improve the students' ability to write. We strive for correctness in form, clarity of ideas, and force in expression.

SOC.: Worthy aims!

SWINK: The succeeding quarters are in many respects a continuation of the first. And I assure you, Socrates, that teaching this elementary material year after year, always with a theme per week from each of approximately a hundred pupils, eventually wears one down.

SOC.: Teaching as you describe it does indeed smack of drudgery. To be King of the Comma and Lord High Executioner of the Paragraph was not my conception of a teacher. In Athens we devoted our attention largely to other matters. But since this work in composition is so important that it must be required of all students, I presume that English teachers at least have the consolation of being highly appreciated and well paid.

SWINK: Far from it, Socrates. Their pay often is relatively poor, compared to that of teachers in the so-called "technical fields."

SOC.: Since it is considered necessary to give so much attention to the mechanics of writing, it would appear that most students have had little previous instruction in these matters. Is that correct?

SWINK: On the contrary, Socrates, a common complaint of our beginning students is that the course largely repeats what they studied in high school. But the fact remains that in many instances, even after the college course, the student continues to write in a decidedly mediocre manner.

SOC.: I see. And am I right in thinking that, since much labor is directed to making the student proficient in these matters, considerable effort is made to follow through and see that he applies the techniques in all his work during the remainder of the college course?

SWINK: Not to the extent that you might expect, Socrates. While some teachers in other departments do follow up conscientiously and insist that the student apply what he learned with us, others appear largely indifferent. And, to be quite frank, I suspect that there are extreme cases of instructors who cannot write well themselves and probably don't even perceive the students' errors. Such teachers cannot appreciate our labors in English composition.

SOC.: And what is the attitude of the students to all this composition? Are they appreciative?

SWINK: Some of them are quite receptive. But it must be admitted that many of them regard it as a chore and are happy to be done with it. We have labored hard with the problem, but not too successfully. We would appreciate any procedures that you might suggest.

SOC.: I would suggest, Professor, that you and your colleagues examine the principles underlying your system of education.

SWINK: How do you mean?

SOC.: I mean that you are expending a considerable amount of your resources, financial and intellectual, wrestling with shadows rather than in dealing with the basic problem.

SWINK: But surely it is important that the student should learn to read and write effectively.

SOC.: That is exactly the point, Professor. Just what does suffice to make the student adequate in these matters? It is important here to distinguish between what is necessary and what is sufficient. The problem is a bit complicated.

SWINK: I am not sure that I follow you, Socrates.

SOC.: There's much that I myself am not clear about. What do you say—shall we attempt to explore the matter, following the argument wherever it may lead?

SWINK: By all means, Socrates—wherever the argument may lead.

SOC.: I take it that in this type of insti-

tution many of your students aspire to become scientists?

SWINK: That is correct.

SOC.: And your college terms itself a "scientific school"?

SWINK: It proudly classifies itself as such.

SOC.: And in it there are various departments, such as physics, chemistry, agronomy, forestry, and engineering?

SWINK: Quite right.

SOC.: And, while they differ in regard to subject matter treated, each of these departments professes to have a science?

SWINK: Correct.

SOC.: And each of these sciences supposedly produces knowledge?

SWINK: Yes, indeed.

SOC.: Now consider carefully, Professor, as exactness is essential. Do the teachers in these various sciences teach precisely the same things year after year, or do they find it necessary from time to time to modify their statements, as their investigations proceed?

SWINK: Modifications do occur. In fact, the better the investigators, the greater the modifications, as knowledge unfolds.

SOC.: Well answered, Professor. And yet I fear that we have not been sufficiently precise.

SWINK: What do you mean?

SOC.: Tell me—does that which is taught at one time, but which subsequently must be modified because it has been found inaccurate or inadequate, deserve, in a strict sense, to be called knowledge, or would you expect it to be something more stable, unchanging, eternal, such as mathematical relations, that most merits the term "knowledge"?

SWINK: It would surely be the latter, Socrates.

SOC.: Then it is not because of any particular conclusions that these investigations are termed "sciences" and the investigators termed "scientists"?

SWINK: Apparently not.

SOC.: And we said that their subject matters differ—for example, the geologist studies stones, while the astronomer studies stars?

SWINK: We did.

SOC.: Then it is not because of any particular conclusions or any particular subject matter that the investigator is termed a "scientist" and his subject a "science"?

SWINK: So it would seem.

SOC.: And yet all these fields are termed "sciences."

SWINK: They are.

SOC.: Then they must possess some feature in common which accounts for the application of the term "science" to each of them. Tell me, Professor, what might this be?

SWINK: So far as I can see, the only thing left is the method of investigation, which the sciences share in common regardless of the subject investigated. But I must say that I cannot see what this has to do with instruction in beginning composition.

SOC.: Perhaps we can show that they are related. Things apparently remote often tend to interpenetrate more than at first appears. Now tell me, could the scientist, regardless of his field of investigation, ever know anything about his subject matter except through the medium of ideas?

SWINK: I don't see how he could.

SOC.: And these ideas are always formulated, as you well know, by means of terms and statements?

SWINK: So they are.

SOC.: And you teach the mechanics of the statement—sentence structure, punctuation, their effects on meanings, and so on?

SWINK: I do.

SOC.: Then you are dealing, consciously or not, with one of the factors indispensable for science wherever it occurs. Am I correct?

SWINK: I must confess that I don't normally think of sentences in quite that way, Socrates. But what you say appears to be true.

SOC.: You say that many of your stu-

dents aspire to become scientists. Surely, then, they should be interested in the body of procedures which collectively are the very essence of scientific investigation.

SWINK: Of course; but they don't often think of the formulation of sentences as a necessary element in scientific method.

SOC.: Perhaps they should. There could be no science without the use of propositions. And if you show your future scientists the role of language in scientific investigation, will not such students surely become interested in the various types of statements, their forms, and how the necessary degree of precision may be achieved? For example, many statements are of such a nature that, if investigation is to advance, they must be shown to imply other statements more readily verified or disproved. This procedure is very important for the scientist.

SWINK: The structure of implication and the nature of verification are difficult subjects, Socrates. I fear that our students could not make much out of them.

SOC.: That, Professor, is equivalent to saying that your students cannot become real scientists. But let us assume for the moment that with good teaching—teaching that presents the formulation of statements as an important factor in the quest for scientific knowledge, rather than as an isolated subject for esoteric drill—the student may be interested. Will he not aspire to achieve the proficiency in punctuation, grammar, and syntax that scientific accuracy requires?

SWINK: He should.

SOC.: And if he perceives that skill and precision in these matters are necessary to success in his field of major interest—in short, if he regards them as something vital—will he regard them as a mere chore?

SWINK: He ought not. But creating enthusiasm, Socrates, has been a major problem for us.

SOC.: And if your colleagues in other fields beheld language being taught with an eye to the way it functions as an instrument aiding investigation in those fields, could they help being sympathetic and co-operative with your efforts?

SWINK: Not if they understood.

SOC.: And would not your colleagues in your own department then regard the teaching of composition as a matter of major importance, rather than a period of mere apprenticeship to be escaped as soon as possible?

SWINK: They should, Socrates. But in our departmentalized scheme of education the interrelationships of the various fields of knowledge receive too little emphasis. And I see many difficulties in the approach you propose.

SOC.: Pray continue.

SWINK: We English teachers are primarily concerned to teach our students to write effectively. Ours is definitely a practical problem. And, if you will pardon me, it seems that you are off on one of your abstract and highly theoretical discourses. I fail to see that your theory of dialectic has anything to do with the practical, mundane matters of freshman composition, where we are chiefly concerned with grammar, spelling, punctuation, and paragraph structure.

SOC.: Dialectic was barely mentioned. But perhaps we can achieve a better grasp of its nature and function. Consider, Professor, exactly why do you regard spelling, punctuation, and sentence structure as practical?

SWINK: Because it is impossible for a person to write well without skill in these matters.

SOC.: And does it follow, then, that whatever is considered necessary for writing well must also be considered practical?

SWINK: It does.

SOC.: That is the way to answer. You asserted, I believe, that clarity of ideas was one of the qualities you tried to develop in the writing of your students?

SWINK: It is.

SOC.: I take it that you regard such clarity as necessary for good writing?

SWINK: We certainly do.

SOC.: Now tell me, Professor, is it possible to have students who are good in spelling, grammar, and punctuation, but who nevertheless write poorly?

SWINK: Of course it is. We have some such students every year. They do well on the placement test when they enroll, and we put them in sections for superior students. But then it develops that, while they were good on the matters you mention, they are lacking in something else, a deficiency not revealed by the test. Sometimes we even have to demote them to sections for slower students.

SOC.: We may conclude, then, that good writing necessitates clarity of thought and that clarity of thought presupposes something in addition to verbal skills and that this "something else," whatever its nature may prove to be, must also be regarded as practical. Is that correct?

SWINK: It appears to be.

SOC.: And now, Professor, since you teach clarity of expression, just what is the nature of this "something else" on which clarity of thought depends?

SWINK: I am not sure that I can answer satisfactorily, Socrates. I can tell when clarity is lacking. But if you insist on asking for an exact methodology by which it can always be achieved, I must confess that I cannot give it. Perhaps it would be better if you explained the nature of the "something else."

SOC.: The "something else," my friend, is that dialectic which you just now dismissed as not related to your problem. But I suspect that you may use it, at least in a dim sort of way, more than you realize. Tell me, what is the meaning of dialectic as you conceive it?

SWINK: It suggests dialogue of some sort.

SOC.: And so it is, but we must distinguish more precisely. Consider, please, is all dialogue dialectic?

SWINK: (*After a pause*) Apparently not. I must confess that I am not clear as to the precise nature of dialectic.

SOC.: Dialectic, Professor, is the route to clarity. The dialectician is one who can ask the right questions to clarify the problem and guide us in the search for truth. In ultimate effect, it is nothing less than the test of truth itself. For, once ideas that are both clear and true have been arrived at, they are characterized by the fact that they can be defended in spoken argument.

SWINK: I quite agree that we English teachers use a procedure analogous to your dialectic, though often, as you say, in "a dim sort of way." How might we improve it?

SOC.: That remains to be discovered. Would you agree, Professor, that clarity presupposes sharp and careful distinctions between words and also between things?

SWINK: I certainly would.

SOC.: The development of such distinctions is an important part of dialectic. It takes us to the essence of things, to their real natures, and affords grounds for good definitions. Tell me, would you agree that good exposition presupposes sound definitions?

SWINK: (*A bit impatiently*) Of course, a knowledge of definitions is necessary. And we try to supply it, or at least some of it, through vocabulary work. The students in these classes learn a very considerable number of definitions.

SOC.: I have no doubt that your students derive great benefit from such work, Professor, but I fear that it does not suffice. For what is required is not only the learning of ready-made definitions but also skill in the art of defining. This is another matter, and far more difficult. Also, we should not overlook the fact that, while analysis is essential, dialectic involves much in addition. For, having discovered the essence of a simple or multiform thing, we must then investigate how it acts upon, or is acted upon, in relation

to other things. We achieve knowledge in so far as we ascertain such relations, and perfect knowledge would necessitate a grasp of the totality of things. Thus we have shown that good writing presupposes clarity, which, in turn, presupposes knowledge, and that all these things in turn depend upon the procedures we have grouped together as dialectic.

SWINK: You make dialectic primary, Socrates. Thank you for not adding that it is therefore highly practical. But the inference is clear, and I must confess that, as you define it, dialectic is not so remote from the practical problems of composition as it at first appeared.

SOC.: It is not remote at all, if our argument is correct, but a necessary part of the subject when this is properly conceived. And, in addition, it can be shown that dialectic includes the very essence of scientific method itself. My memory is notoriously bad, but I believe it was one of your illustrious English writers who once asserted that "no perfect discovery can be made upon a flat or level; neither is it possible to discover the more remote and deeper parts of any science, if you stand but upon the level of the same science, and ascend not to a higher science." The higher science neded in relation to your field, my friend, is dialectic.

SWINK: An interesting approach, Socrates. But, assuming that skill in dialectic is necessary, I still see great difficulty in developing it.

SOC.: Nothing great is easy. But I fear that the art of thought is indispensable for clarity, and consequently for good composition. What is the nature of the difficulty that you foresee?

SWINK: It's the matter of our teaching staff, Socrates. I doubt if many of us are prepared to handle dialectic in the manner you apparently consider necessary.

SOC.: But surely most of you have done —what do you call it?—graduate work?

SWINK: So we have, Socrates. But in many cases it has not prepared us to teach the art of dialectic, except in the dim sort of way.

SOC.: And what kind of studies do English teachers pursue, pray tell, when they engage in this graduate training?

SWINK: There are various aspects, Socrates. For one thing, we spend considerable time acquiring the art of appreciating and evaluating poems, plays, novels, and so on. Not long ago we acquired a young instructor with excellent training of this kind. His major interest was the Romantic poets, yet we had no choice but to put him to work teaching composition to half-literate candidates for the school of engineering. Needless to say, he was not particularly happy with the assignment.

SOC.: You do, indeed, bring forth a difficulty. I fail to see how sensitivity to art can be an adequate substitute for logical analysis, or what was known in my day as dialectic. But I have formulated my criticism of artists on other occasions. It is doubtful if adequate skill in dialectic is acquired incidentally in the study of other matters. Pray continue.

SWINK: Another aspect of the training consists in elaborate studies in the historical development of language and literature. For example, a candidate for a higher degree may spend considerable time learning Anglo-Saxon.

SOC.: What! Do you mean that you teach your students to write in Anglo-Saxon?

SWINK: Heavens, no, Socrates. Most of them can't even write the vernacular. But it is felt that the teacher can master the genius of the language only by the study of its historical development.

SOC.: It appears a bit incongruous, but perhaps I do not understand. Tell me, Professor, who was the greatest master of this English language?

SWINK: Shakespeare, probably.

SOC.: Then I suppose that to acquire his art he engaged in elaborate studies of the kind you mention?

SWINK: Not that we know of.

Soc.: Then such studies apparently are not indispensable. And I would expect them to show a tendency to degenerate into mere antiquarianism for its own interest. Is it perhaps so?

Swink: The accusation is sometimes made.

Soc.: Then why, pray, is there so much emphasis in this direction?

Swink: It is largely a matter of tradition, I suppose.

Soc.: As you know, I frequently found traditions unable to meet the test of reason. I can see how a knowledge of the evolution of the language is essential for the scholars who write your excellent dictionaries. But since you do not aspire to teach your budding technicians to write dictionaries, or poetry, or Anglo-Saxon, I am not clear as to how extensive training in these matters is to enable you to achieve a goal of another nature. Still, the difficulty is not insurmountable. Will not your staff, once they perceive the approach needed, gladly work to acquire the skills necessary to show the role of language in scientific investigation, that being the major concern of your institution?

Swink: The difficulty is not easily handled, Socrates. Your approach to our problem of teaching requires that the teacher should go beyond his particular field of specialization and deal with several fields as they interpenetrate. Yet the trend of our time has been toward specialization. The traditional training for prospective English teachers in our graduate schools emphasizes research and is designed to make specialists of us, too. With specialization comes a certain professional pride, which tends to make us think primarily in terms of our own specialties rather than in terms of the organic whole, the grasp of which, in some sense, you presuppose for a good education.

Soc.: Well spoken, Professor. A grasp of how the parts of the whole are related is essential. But I observe that education in Vivenza often is attempted by means of an additive process, of such a nature that at the end of a prescribed period one of your amazing calculating machines is able to determine whether the student has achieved wisdom.

Swink: There are additional problems, Socrates. Many of our professors have heavy teaching loads and serve on numerous committees. Once we are involved in this situation, there is little time to achieve the insights presupposed on the part of your dialectician.

Soc.: Your problem is somewhat complicated. And probably your colleagues would consider me unqualified to comment on it, as I have none of the graduate work so highly regarded. Indeed, I could not even qualify as a teacher in your secondary schools, as there are many required courses that were unknown in my time. But strange to say, despite all these innovations, I find the students in Vivenza somewhat deficient in their knowledge of first principles.

Swink: I quite agree, Socrates. We keep adding courses, but somehow they don't seem to meet the problem.

Soc.: This problem is not primarily a quantitative matter, Professor. Perhaps you and your colleagues need to re-examine the nature of knowledge, to see how it can best be achieved.

Swink: Something is needed.

Soc.: To follow the argument here requires a vastly longer route.

Swink: What do you mean?

Soc.: Tell me, are there not various conceptions as to what is meant by the term "knowledge"?

Swink: That is a little out of my line, Socrates, as my specialty was Anglo-Saxon. But I suppose there are.

Soc.: And the way in which we conceive knowledge will determine the manner in which we pursue it.

Swink: Apparently so.

Soc.: And a true education is a process of learning to pursue knowledge more effectively?

Swink: Of that I feel certain.

Soc.: Then, to be sure that we are proceeding wisely with this business of edu-

cating either ourselves or others, we should submit the various conceptions of knowledge to the test of reason to see whether we can ascertain which is correct?

SWINK: So it would seem.

SOC.: That is what I mean by the longer route. And I strongly suspect, Professor, that many of the problems encountered in giving satisfactory instruction in the art of composition, and also those involved in teaching various other subjects, originate in the failure to perceive that these problems are but a part of an even greater problem, the nature of knowledge and how it may be attained.

SWINK: This "longer route" sounds rather difficult. I doubt if many of our students could ever master it.

SOC.: The route to knowledge is an arduous climb, and the students need unerring guides to reach the goal. But, unless the teachers have traversed the route and eventually enable their better students to traverse it, I fear that the state will be penalized.

SWINK: The state?

SOC.: The state. Did you not say at the outset that your educational system is grounded in a democratic scheme of things?

SWINK: Vivenza is definitely democratic.

SOC.: I presume that upon becoming college graduates your students, as accomplished technicians—agronomists, engineers, and so on—achieve relatively prominent positions in the community?

SWINK: Many of them do.

SOC.: And in a democracy does not the responsibility for crucial political decisions reside ultimately with the citizens?

SWINK: Of course.

SOC.: And if such decisions are to be made wisely, if they are to represent collective intelligence rather than collective ignorance, must not at least the more prominent and influential citizens possess knowledge, and not mere opinion?

SWINK: They must.

SOC.: And the democratic way of arriving at such decisions is by means of thought and discussion on the part of the citizens?

SWINK: Such discussion is a vital part of democracy.

SOC.: And we agreed that skill in such a quest for truth constitutes the art of dialectic?

SWINK: We did.

SOC.: Then not only good writing but also the survival of the state depends on skill in acquiring knowledge, and no pains should be spared to help the student become a skilful climber on the hard and tortuous route to truth. And, while the capacity for great achievement must be partly the gift of nature, power depends in part on practice and art, including the art of dialectic imparted by the teacher.

SWINK: You make the teacher sound important indeed, Socrates. But I must say that I think you are a bit hard on teachers of English. I doubt that they are at fault more than teachers of other subjects.

SOC.: You are quite right, and we must be accurate. The basic difficulty is not peculiar to any one field of instruction or to any one type of institution. It is imbedded in the dominant conception of education. Correction is possible only with the proper handling of the curriculum as an organic whole.

SWINK: What you suggest sounds hard to accomplish.

SOC.: Hard is the good for both men and states, Professor, even as it was in ancient Athens. You undoubtedly have learned from Thucydides that we had our difficulties with democracy in Greece. But I must be off now. I am overdue at a symposium. One of my friends is to read a composition on the implications of the new physics for political philosophy. He is a most promising young man, and I am eager to learn whether he has achieved wisdom.

[*The Shade of Socrates fades away, and darkness settles around Old Main.*]

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